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Soil
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Service

In cooperation with
United States Department
of the Interior, Bureau of
Land Management, and
University of Nevada,
Agricultural Experiment
Station

Soil Survey of Lander County, Nevada, North Part (Volume I)

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How To Use This Soil Survey

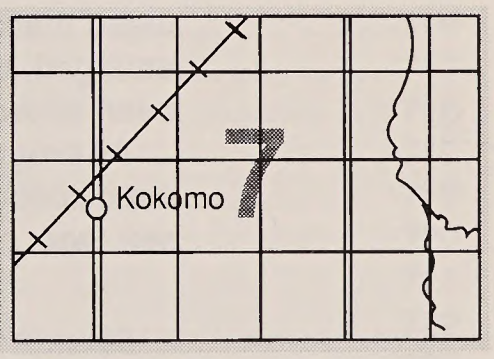
General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

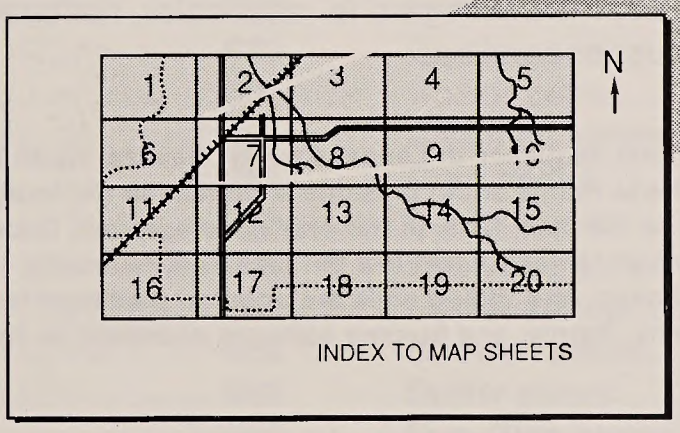
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.



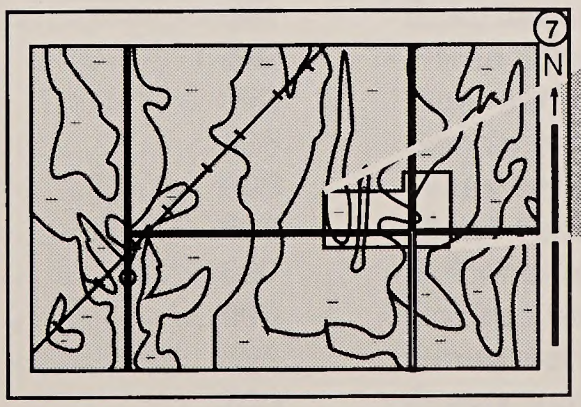
MAP SHEET

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.

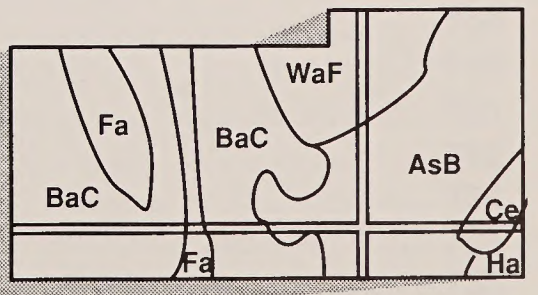


INDEX TO MAP SHEETS

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



MAP SHEET



AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1983. Soil names and descriptions were approved in 1985. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1983. This survey was made cooperatively by the Soil Conservation Service; the United States Department of the Interior, Bureau of Land Management; and the University of Nevada, Agriculture Experiment Station. It is part of the technical assistance furnished to the Lander County Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

All programs and services of the Soil Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Cover: A typical landform sequence in Lander County, Nevada, North Part. This is along Trout Creek in the Shoshone Range south of Battle Mountain. In the foreground, Doowak and Veta soils are dominant on the inset fans. In the near middleground, Oxcorel, Dun Glen, and Whirlo soils are dominant on fan skirts and low fan piedmont remnants. In the far middleground, Tomera, Snapp, and Whirlo soils are on a fan piedmont remnant. In the background, Glean, Locane, Pernty, and Sumine soils are dominant on the mountains.

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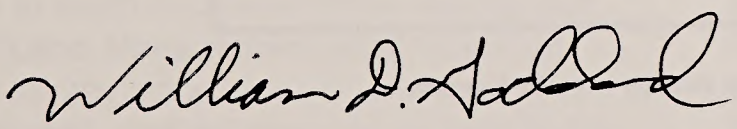
Foreword

This soil survey contains information that can be used in land-planning programs in Lander County, Nevada, North Part. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the suitability of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.



William D. Goddard
State Conservationist
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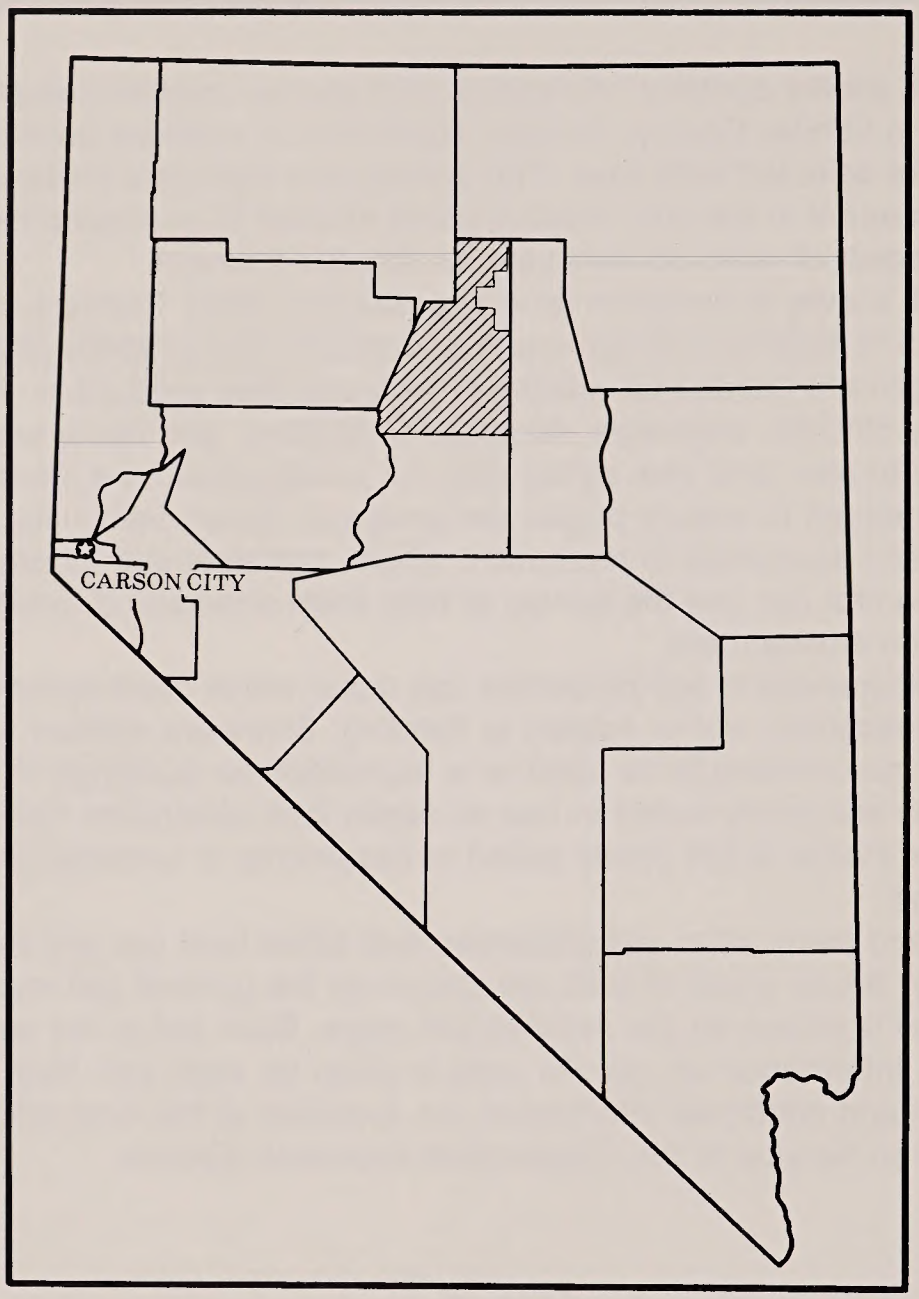

Location of the survey area in Nevada.

Soil Survey of
Lander County, Nevada, North Part

By Carole E. Jett, Soil Conservation Service

Fieldwork by George J. Staidl, Michael T. Jackson, and Barry J. Strickler, Soil Conservation Service; Michael J. Zielinski and Steven Mellington, Bureau of Land Management; and Soil and Land Use Technology, Inc., under contract with the Bureau of Land Management

United States Department of Agriculture, Soil Conservation Service
In cooperation with
United States Department of the Interior, Bureau of Land Management, and University of Nevada, Agriculture Experiment Station

Lander County, North Part, is in the north-central part of Nevada. The survey area contains 1,588,530 acres, or 2,482 square miles. Battle Mountain is the only town located in the survey area.

The survey area is bounded on the west by Pershing and Humboldt Counties, on the north by Elko County, and on the east by Eureka County. The northeast part of the county is included in the Tuscarora Mountain Area soil survey.

The survey area consists of numerous north-south oriented mountain ranges and valleys. Elevations average 8,500 feet in the mountains and 4,500 feet in the valleys. The Humboldt River flows east to west across the northern part of the survey area. The Reese River flows south to north and bisects the central part.

The Bureau of Land Management administers all public land in the survey area.

Descriptions, names, and delineations of soils in this soil survey do not fully agree with those on soil maps for adjacent survey areas. Differences are the result of better knowledge of soils, modifications in series concepts, intensity of mapping, or the extent of soils within the survey.

General Nature of the Survey Area

This section gives general information about the survey area. It briefly discusses history, water supply, industries and transportation, drainage, geology, and climate.

History

The first explorers in Lander County were members of the Peter Skeen Ogden expedition in 1828. Ogden and others worked their way upstream on the Humboldt River bottom lands, trapping beavers and other furbearers. In 1841, the first party of migrants on its way to California came into the area. By 1844, the winding course of the Humboldt River became known as the "Humboldt Trail," the main thoroughfare for the westward migration.

Development began in 1869 with the completion of the transcontinental railroad, which opened the area to both eastern and western markets. The town of Battle Mountain developed as a railroad station and terminal for the freight and stage roads to the south. About this time the numerous mines caused the area to boom. During the 1890's, an expanding cattle industry replaced mining as the economic base.

After the discovery of barite, gold, and copper, mining again became the economic base. Farming, both livestock and crop production, diversifies the local economy.

Water Supply

Wells and streams supply irrigation water. In the arid valleys, wells are used to irrigate alfalfa and small grains. Stream water is used in irrigating native meadows and pastures along drainageways. At the

higher elevations, numerous small springs, seeps, and small, intermittent streams provide adequate water sources for livestock and wildlife.

Battle Mountain obtains its water supply from deep underground wells. Rural areas also fill their domestic water needs from wells or dependable springs.

Industries and Transportation

The major industries in the survey area are mining, ranching, and irrigated crop production.

Mining provides most of the employment in the area. Gold and barite are the major minerals mined, and copper and turquoise make up a smaller portion *(25)*.

The ranches are mainly cow-calf operations that sell the calves in fall.

Irrigated crops are produced mostly in the Middle Reese River Valley, Antelope Valley, and North Battle Mountain areas. The main crops are alfalfa hay, alfalfa seed, and small grains.

The Southern Pacific and Western Pacific Railroads parallel the Humboldt River across the northern part of the survey area. The minerals mined in the area are shipped mostly by rail.

Interstate 80 runs east-west across the northern part of the survey area. State Highway 305 runs north-south between Battle Mountain and Austin, Nevada. Numerous dirt roads or jeep trails, which are accessible in summer and fall, cross the survey area.

Drainage

The Reese River drains a large part of Lander County, North Part. It is an intermittent axial stream that flows northward through the survey area to join the Humboldt River near Battle Mountain. Rock Creek drains the northeastern corner of the survey area and joins the Humboldt River northeast of Battle Mountain. The Humboldt River flows westward and then northwestward across the northern part of the county and terminates in the Lahontan Basin at the Humboldt Sink.

The rest of the survey area consists of bolsons called Buffalo and Grass Valleys. These are basins that intermittent streams internally drain. These streams flow only in spring or during localized thunderstorms in summer and terminate at a central playa within these valleys.

Geology

The geology of the survey area is variable and complex.

Most outcrops of pre-Tertiary rocks in this area consist of sedimentary and metasedimentary rocks, mainly interbedded chert, shale, argillite, greenstone, and quartzite. These rocks dominate the Augusta, Battle Mountain, and most of the Shoshone and Toiyabe Ranges. Typically, Atlow, Linrose, Packer, and Slaven soils formed in these rocks.

The volcanic rocks in this area include rhyolitic and andesitic tuffs, welded ash-flow tuffs, basalt, and related pyroclastic rocks. Most of these were laid down during the Miocene and Pliocene Epochs. These rocks are dominant in the Sheep Creek Range and Fish Creek Mountains and are in small areas in the central Shoshone and Toiyable Ranges. Typically, Colbar, Hooplite, Laped, and Walti soils formed in these rocks.

The oldest valley fill material is sediment of Tertiary age. It occurs along the Middle Reese River Valleys, in the Fish Creek Basin, and as old alluvial divides between the Carico and Reese Valleys and the Grass and Crescent Valleys. This valley fill, which is partially lithified, typically consists of siltstone, sandstone, conglomerate, and some beds of volcanic ash. Typically, Genaw, Perlor, Puett, and Tessfive soils formed in these deposits.

The fan piedmont slopes in the valleys are made up of older Quaternary alluvium with influence from loess and high amounts of volcanic ash. This alluvium is parent material of Beoska, Broyles, Tenabo, Whirlo, and other soils.

The youngest material in the area consists of recent alluvium along the flood plains of the Reese and Humboldt Rivers and on the lower valley floors. Typically, Batan, Ocala, Sonoma, and Wendane soils formed in this material.

Climate

Prepared by the National Climatic Data Center, Asheville, North Carolina.

In Lander County, summers are hot, especially at lower elevations, and winters are cold. Rangeland takes in most of the survey area. At lower elevations precipitation is normally light during all months of the year. At higher elevations it is much greater and snow accumulates to considerable depths. Much of the snowmelt irrigates crops in nearby valleys. Climatic data for Austin included here closely resemble those for the southern part of the survey area and for areas at higher elevations.

Table 1 gives data on temperature and precipitation for the survey area, as recorded at Austin and Battle Mountain, Nevada, for the period 1951-78. Table 2 shows probable dates of the first freeze in fall and last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 31 degrees F. The average daily minimum temperature is 19 degrees F. The lowest temperature on record, -30 degrees F, occurred at Battle Mountain on December 9, 1972. In summer, the average temperature is 68 degrees F. The average daily maximum temperature is about 86 degrees F. The highest temperature, 109 degrees F, was recorded at Battle Mountain on July 27, 1975.

Growing degree days, shown in table 1, are equivalent to "heat units." Beginning in spring, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 14 inches at Austin and 7 inches at Battle Mountain. Of this, 60 percent usually falls in April through September, which includes the growing season for most crops. The heaviest 1-day rainfall during the period of record was 2.27 inches at Battle Mountain on October 12, 1963. Thunderstorms occur on about 12 days each year.

Average seasonal snowfall is 40 inches at Austin and 24 inches at Battle Mountain. The greatest snow depth at any one time during the period of record was 23 inches at Austin. On the average, 31 days at Austin and 14 days at Battle Mountain have at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year. Every few years in the survey area a blizzard strikes with high winds and drifting snow. During blizzards, snow remains on the ground for many weeks, even at lower elevations, and livestock suffer.

The average relative humidity in midafternoon is about 30 percent. Humidity is higher at night, and the average at dawn is about 65 percent. The sun shines 85 percent of the time possible in summer and 60 percent in winter. The prevailing wind is from the west. Average windspeed is highest in spring and averages 9 miles per hour.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. The fieldworkers mainly in the northern half of the survey area were soil scientists of the Soil Conservation Service and the Bureau of Land Management. Those mainly in the southern half of the area were soil scientists of Soil and Land Use Technology, Inc., under contract to the Bureau of Land Management.

Some discrepancies were recognized when joining the Tuscarora Mountain Soil Survey Area. This older soil survey was completed within the framework of knowledge and standards that existed at the time. Also, the acreage of soils involved along the join is so small that no purpose was served to extend the delineations into this area. Because of a better understanding of soils and an improved methodology in mapping techniques, some of the soil names, map unit components, or physiographic positions may not be exactly the same. These advancements should have little or no affect in the use of this survey in managing soils.

The soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unmodified parent material in which the soil formed. The unmodified material is devoid of roots and most other living organisms, and biological activity has not changed it.

The soils and miscellaneous areas in the survey area are in orderly patterns related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil or miscellaneous area is associated with a particular kind or segment of the landscape. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Individual soils on the landscape commonly merge gradually into one another as their characteristics gradually change. To construct an accurate map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size, and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining

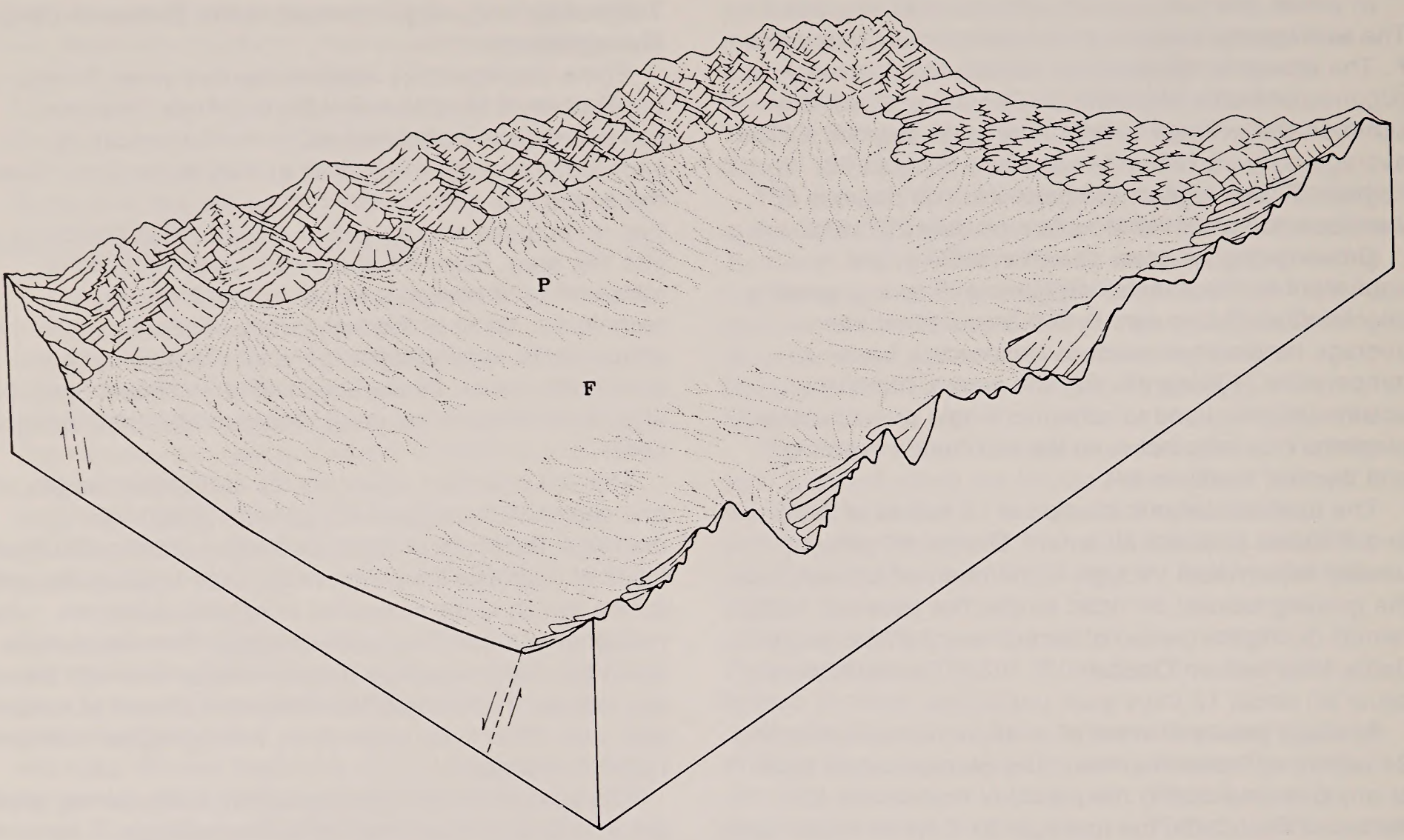

Figure 1.—The major physiographic parts of an internally-drained intermontane basin, or bolson: the piedmont slope (P) and the basin floor or, more specifically, the bolson floor (F). The schematic diagram shows part of an elongated bolson; bounding mountain ranges are on the near and far sides of the bolson and hills cut off the far end. The dotted lines are drainageways and suggest positions of major landforms. Neither the playa nor the drainageways of the floor are shown.

their properties, the soil scientists assigned the soils to taxonomic classes.

Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy is the system of taxonomic classification used in the United States. It is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. The soil scientists classified and named the soils in the survey area. Then they compared the individual soils with similar soils in the same taxonomic class in other areas. They did so to confirm data and assemble additional data based on experience and research.

Some typical pedons described are located in the southern part of Lander County, outside of the survey area. This situation exists because a large part of Lander County was mapped under a separate private contact. Soils that were already mapped at that time and that were not mapped again within the survey area have the typical pedon description already available for those soils regardless of which survey area they are in. The affected typical pedon description has a statement under the heading "Type location" indicating its origin outside of the survey area. In some pedons, taxa are in map units that are similar but not identified within this survey area.

While the soil survey was in progress, samples of some of the soils in the area were collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties. In so doing, they determine the expected behavior of the soils under different uses. Interpretations for all of the soils were field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local

needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that in most years a given soil will have a high water table within certain depths. But they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

Soil scientists located and identified the significant natural bodies of soil in the survey area. Then they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Landscapes

In this soil survey, the mapped areas generally represent associations of two or three soil components as well as other included soils of small extent. Soil patterns commonly coincide with landforms and physiographic positions. In the section "Detailed Soil Map Units," descriptive terms are used to identify where

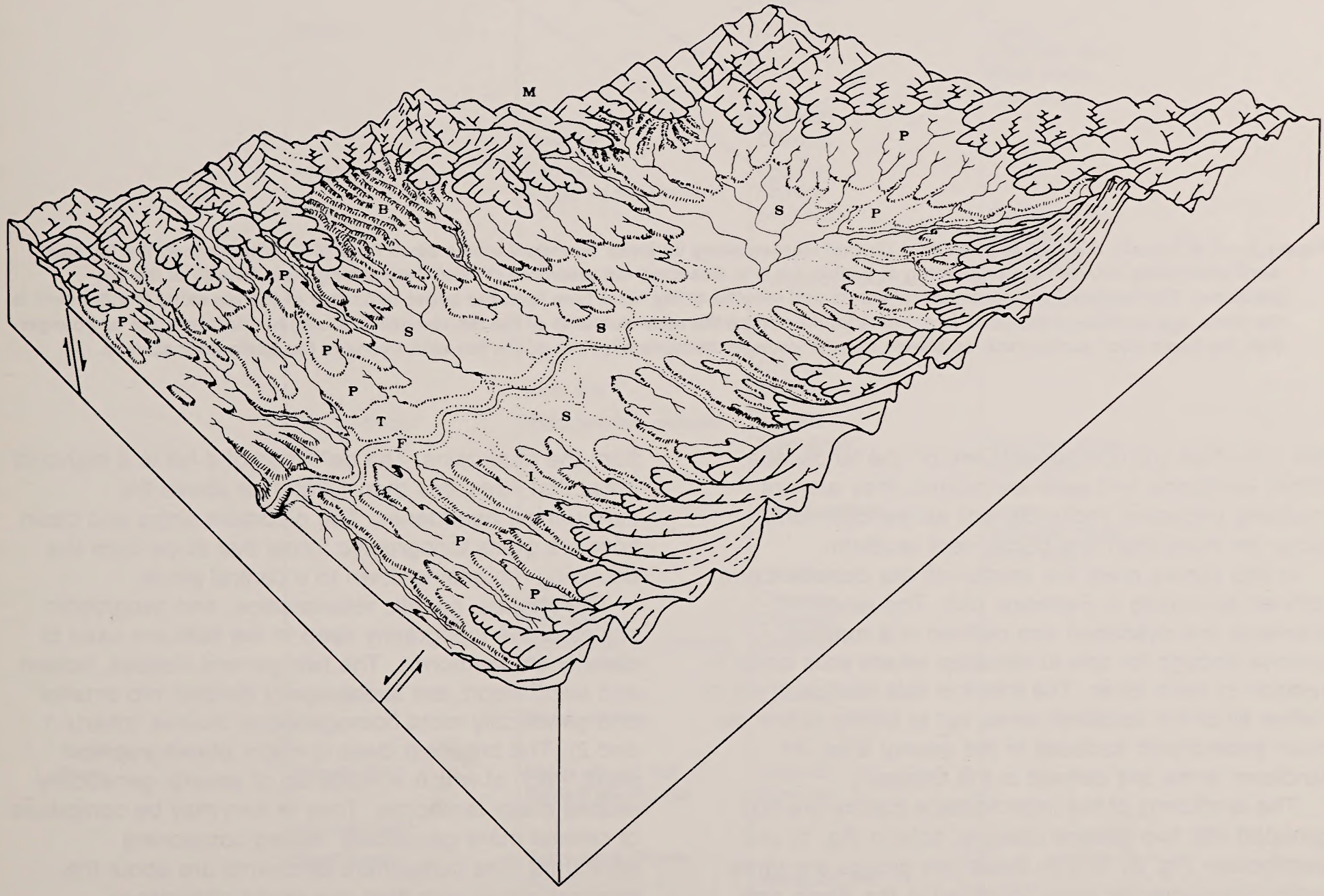

Figure 2.—The semibolson displays the effects of several cycles of dissection and deposition. The major landforms are ballenas (B), the fan piedmont (comprising several levels, or ages, of fan remnants) (P), the fan skirt (S), an axial stream terrace (T), and an axial stream flood plain (F). Alluvial fans are not distinguished from the fan piedmont. Inset fan (I) component landforms are located between fan remnants, and mountains bound the basin on two sides.

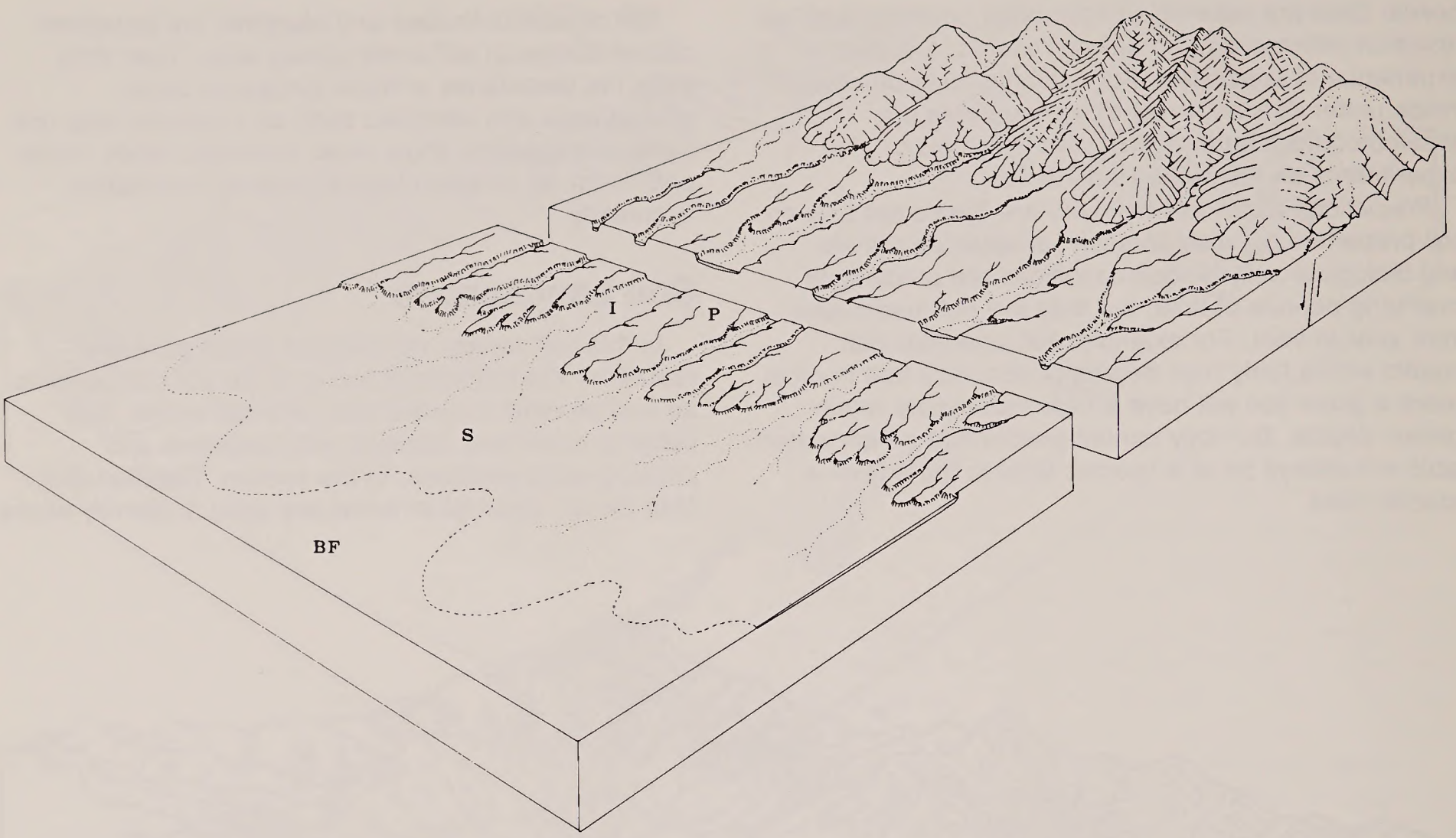

Figure 3.—A schematic diagram of a fan skirt (S) that merges along its lower boundary with a basin floor (BF). What formed the fan skirt were coalescing alluvial fans originating at gullies cut in a dissected fan piedmont (P) and debouching inset fans (I) of the fan piedmont. The erosional fan piedmont remnants and mouths of the inset fans form the upper boundary of the fan skirt. The fan skirt is the same age surface as the inset fans but is younger than the relict summits of the fan remnants. It may be the same age or younger than the basin-floor surface but, as shown here, is younger because alluvium of the fan skirt overlaps the basin-floor surface.

the individual soil components are on the landscape. While landforms and soils are related, they are not mutually exclusive. Individual soil series commonly occur on more than one component landform.

In this survey area, the landforms are classified and defined according to Peterson *(22)*. The landform elements are described and defined in a manner precise enough for one to visualize where soils occur in relation to each other. The intent of this section is not to define all of the landform terms but to briefly define the main geomorphic surfaces in the survey area. All landform terms are defined in the Glossary.

The landforms of the intermontane basins are first grouped into two general classes, bolson (fig. 1) and semibolson (fig. 2). Within these two groups are three major physiographic parts identified in the Basin and Range Province (fig. 3). These are the bounding mountains, the piedmont slope, and the basin floor. The bounding mountains are not well defined; the slope components are identified and the hills are separated from the mountains. The definition of a hill is a highland mass that rises less than 1,000 feet above the surrounding boundaries. The piedmont slope and basin floor are gross topographic forms that slope from the bounding mountains down to a central playa.

The shapes, genetic relationships, and geographic scales of the topography seen in the field are used to classify the landforms. The two general classes, bolson and semibolson, are successively divided into smaller and genetically more homogeneous classes (charts 1 and 2). The broadest class is major physiographic parts, each of which is made up of several genetically related major landforms. They in turn may be comprised of several more genetically related component landforms. The component landforms are about the smallest single units that one would consider in combined terms of their form, constituent materials, and genetic history. Some component landforms, such as fan piedmont remnants, have distinctive topographic parts with quite different geomorphic histories. The

CHART 1.—CLASSIFICATION OF BOLSON LANDFORMS

Landforms			Parts of landforms	
I Major physiographic part	II Major landform	III Component landform	IV Landform element	V Slope component
Bounding mountains				
Piedmont slope	Mountain valley fan	Erosional fan remnant	Summit	
			Side slope	Shoulder slope Back slope Foot slope
			Partial ballena	Crest Shoulder slope Back slope Foot slope
			Channel	
		Inset fan	Channel	
	Rock pediment	Rock pediment remnant	Summit	Crest
			Side slope	Shoulder slope Back slope Foot slope
			Channel	
	Ballena	.....	.....	Crest Shoulder slope Back slope Foot slope
			Channel	
		Inset fan	Channel	
	Alluvial fan	Fan collar	Channel	
		Erosional fan remnant	Summit	
			Side slope	Shoulder slope Back slope Foot slope
			Partial ballena	Crest Shoulder slope Back slope Foot slope
			Channel	
		Inset fan	Channel	
	Fan piedmont	Erosional fan remnant	Summit	
			Side slope	Shoulder slope Back slope Foot slope
			Partial ballena	Crest Shoulder slope Back slope
			Channel	
		Inset fan	Channel	
		Fan apron	Channel	
		Nonburied fan remnant	Channel	
		Beach terrace		
	Fan skirt	.....	Channel	
		Beach terrace		
Basin floor (bolson floor)	Alluvial flat	Relict alluvial flat	Channel	
		Recent alluvial flat	Channel	
	Alluvial plain			
	Sand sheet	Sand dune (Parna dune)	Interdune flat	
	Lake plain	Lake plain terrace	Channel	
	Playa	Flood plain playa	Channel	

CHART 2.—CLASSIFICATION OF SEMIBOLSON LANDFORMS

Landforms			Parts of landforms	
I Major physiographic part	II Major landform	III Component landform	IV Landform element	V Slope component
Bounding mountains				
Piedmont slope	Mountain valley fan	Erosional fan remnant	Summit	
			Side slope	Shoulder slope
				Back slope
				Foot slope
			Partial ballena	Crest
				Shoulder slope
				Back slope
				Foot slope
			Channel	
		Inset fan	Channel	
	Rock pediment	Rock pediment remnant	Summit	Crest
			Side slope	Shoulder slope
				Back slope
				Foot slope
			Channel	
	Ballena			Crest
				Shoulder slope
				Back slope
				Foot slope
			Channel	
		Inset fan	Channel	
	Alluvial fan	Fan collar	Channel	
		Erosion fan remnant	Summit	
			Side slope	Shoulder slope
				Back slope
				Foot slope
			Partial ballena	Crest
				Shoulder slope
				Back slope
				Foot slope
			Channel	
		Inset fan	Channel	
	Fan piedmont	Erosional fan remnant	Summit	
			Side slope	Shoulder slope
				Back slope
				Foot slope
			Partial ballena	Crest
				Shoulder slope
				Back slope
				Foot slope
			Channel	
		Inset fan	Channel	
		Fan apron	Channel	
		Nonburied fan remnant	Channel	
	Pediment	Pediment remnant	Summit	
			Side slope	Shoulder slope
				Back slope
				Foot slope
			Channel	
	Fan skirt		Channel	

CHART 2.—CLASSIFICATION OF SEMIBOLSON LANDFORMS—Continued

Landforms			Parts of landforms	
I Major physiographic part	II Major landform	III Component landform	IV Landform element	V Slope component
Basin floor (semibolson floor)	Alluvial flat	Relict alluvial flat	Channel	
		Recent alluvial flat	Channel	
	Alluvial plain			
	Basin-floor remnant	. . . . .	Summit	
			Side slope	Shoulder slope
				Back slope
				Foot slope
			Partial ballena	Crest
				Shoulder slope
				Back slope
				Foot slope
			Channel	
		Inset fan	Channel	
	Sand sheet	Sand dune		
	Axial-stream flood plain	Flood plain playa	Channel	
		Stream terrace	Summit	
		River terrace	Side slope	Shoulder slope
				Back slope
				Foot slope

fourth class, landform elements, recognizes these parts. The fifth class, slope components, includes those landform elements that are erosional surfaces to be subdivided into their genetic components.

For soil survey applications, it would be most convenient if somewhere in the hierarchy the landform classes corresponded to individual soils. The very purposes of a landform classification, however, prevent such classes being gathered in a single category.

In the section "General Soil Map Units," landscape positions are given for each major component. These generally are major physiographic parts, major landforms, or component landforms. In the section "Detailed Soil Map Units," broad landscape positions are given for each map unit in the map unit setting. These are major physiographic parts or major landforms. More detailed landscape positions are given for each major component and contrasting inclusion. These generally are component landforms, landform elements, or slope components.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The soils or miscellaneous areas making up one unit can occur in other units but in a different pattern.

A perspective of how the general soil map units relate to the various broad landscapes is illustrated in figures 4 and 5. The map units in figure 4 are representative of those on a bolson that is an internally drained intermontane basin. The map units in figure 5 are representative of those on a semibolson that is an externally drained intermontane basin.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils or miscellaneous areas can be identified on the map. Likewise, areas that are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The 22 general map units in this survey have been grouped into four general kinds of landscape for broad interpretive purposes. Each of the broad groups and the map units in each group are described in the following pages.

Map Unit Descriptions

Areas Dominated by Soils on Bolson and Semibolson Floors

There are five map units in this group. The soils and miscellaneous areas in the group are dominantly on basin floors, axial stream flood plains, alluvial flats, lake plains, and their remnants *(22)*. Elevations range from 4,450 feet in the northern part of the survey area to 5,700 feet in the southern part. The average annual precipitation is 5 to 8 inches, the average annual air temperature is 46 to 52 degrees F, and the frost-free season is 100 to 120 days.

The soils in this group are level to gently sloping and very deep and have dominantly stratified silty textured profiles. Most of the soils are salt and sodium affected to some degree.

The soils form drainage catenas across the valley floors. The poorly drained, frequently flooded soils exhibit little or no profile development and are on the youngest, actively aggrading geomorphic surfaces. The somewhat poorly drained, occasionally flooded soils exhibit minimal profile development. They are on young, semistable geomorphic surfaces. The moderately well drained and well drained, nonflooded soils exhibit limited profile development and are on slightly older, yet still Holocene, stable geomorphic surfaces.

1. Playas

This map unit occurs on level basin floors in the sink areas of Buffalo and Grass Valleys. The areas are barren of vegetation. Water is ponded in these areas in the spring of most years following spring runoff.

This map unit makes up about 1 percent of the survey area.

This miscellaneous area consists of nearly impermeable lacustrine sediments with a veneer of eolian sand.

This map unit is not suited to most uses.

2. Wendane-Gund-Batan

Level and nearly level, very deep, somewhat poorly drained and moderately well drained soils on alluvial flats, alluvial flat remnants, lake plains, and lake plain terraces

This map unit is in the lower part of Grass Valley bordering the playa. The vegetation is mainly basin wildrye, alkali bluegrass, inland saltgrass, black greasewood, and rubber rabbitbrush on Wendane soils;

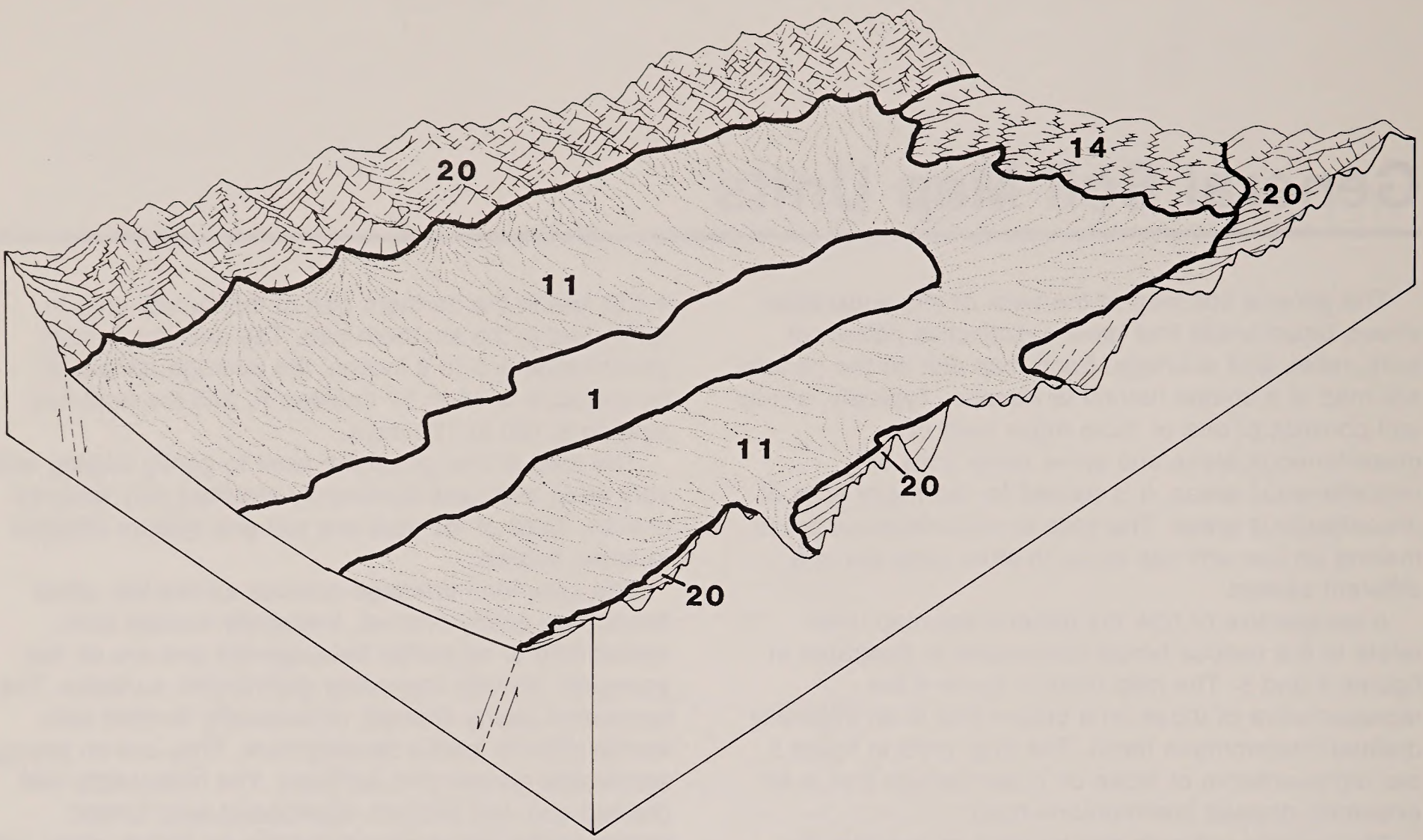

Figure 4.—Typical relationship of general soil map units and landscapes: Playas (1); Buffaran-Allor-Chiara (11); Puett-Wieland-Genaw (14); and Itca-Reluctan-Punchbowl (20).

basin wildrye, black greasewood, and basin big sagebrush on Gund soils; and bottlebrush squirreltail, shadscale, bud sagebrush, and black greasewood on Batan soils.

This map unit makes up about 1 percent of the survey area.

The Wendane series consists of somewhat poorly drained soils on alluvial flats and lake plains. These soils have a thin, light-colored surface layer and are dominantly stratified medium textured and moderately fine textured throughout the profile. They are strongly salt and sodium affected. They are subject to common flooding.

The Gund series consists of somewhat poorly drained soils on lake plain terraces. These soils have a thin, light-colored, medium textured surface layer and a profile that is dominantly medium textured and moderately fine textured in the upper part and fine textured lake sediments in the lower part. They are strongly salt and sodium affected. They are subject to rare flooding.

The Batan series consists of moderately well drained soils on alluvial flat remnants. These soils have a thin, light-colored surface layer and are dominantly stratified medium textured and moderately fine textured throughout the profile. They are strongly salt and sodium affected. These soils are not subject to flooding.

Of minor extent in this unit are McConnel and Tulase soils. McConnel soils are somewhat excessively drained, stratified, very gravelly and extremely gravelly, moderately coarse textured soils on offshore bars. They support Thurber needlegrass, bluebunch wheatgrass, and Wyoming big sagebrush. Tulase soils are well drained, medium textured soils in lagoons. They support Thurber needlegrass, bluebunch wheatgrass, and Wyoming big sagebrush. These soils are not salt or sodium affected and are not subject to flooding.

This unit is used for livestock grazing and wildlife habitat. The main limitations are the strongly salt- and sodium-affected soil profiles and the low average annual precipitation.

3. Sonoma-Rixie-Paranat

Level and nearly level, very deep, poorly drained soils on axial stream flood plains

This map unit is in the north part of the survey area along the Humboldt River meander belt. The vegetation is mainly basin wildrye, creeping wildrye, and sedges and small areas of alkali sacaton, alkali bluegrass, and inland saltgrass. Flooding by the Humboldt River is common and occurs at least one or more springs in five for a duration of 2 days to 1 month.

This map unit makes up about 3 percent of the survey area.

The Sonoma soils have a thick surface layer and are dominantly stratified medium textured and moderately fine textured throughout the profile. These soils are salt free or slightly salt and sodium affected in the surface layer but are not salt or sodium affected throughout the rest of the profile.

The Rixie soils have a thick, dark colored surface layer and are dominantly stratified medium textured and moderately fine textured throughout the profile. These soils are not salt or sodium affected.

The Paranat soils have a thick, dark colored surface layer and are dominantly stratified medium textured and moderately fine textured throughout the profile. These soils are not salt or sodium affected.

Of minor extent in this map unit are Ocala, Batan, and Rose Creek soils. Ocala soils are somewhat poorly drained, subject to occasional flooding, and medium textured. They are on alluvial flats. They are strongly salt and sodium affected and support basin wildrye and black greasewood. Batan soils are moderately well drained, not subject to flooding, and medium textured.

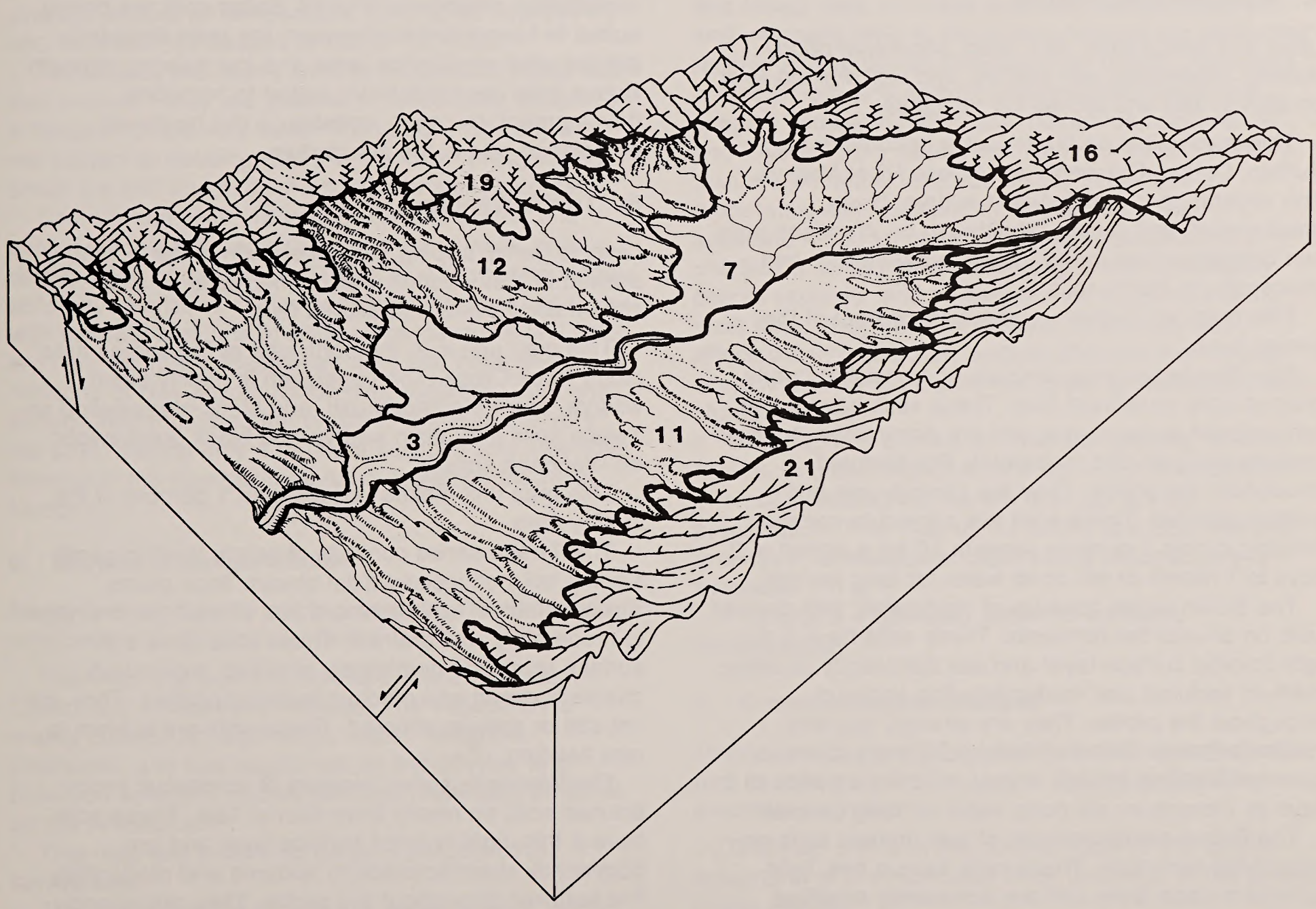

Figure 5.—Typical relationship of general soil map units and landscapes: Sonoma-Rixie-Paranat (3); Orovada-Broyles-Shabliss (7); Buffaran-Allor-Chiara (11); Bioya-Chiara-Cortez (12); Robson-Akerue-Buffaran (16); Sumine-Chen-Rock outcrop (19); and Quarz-Walti-Glean (21).

They are on alluvial flat remnants. They are strongly salt and sodium affected and support bottlebrush squirreltail, black greasewood, and shadscale. Rose Creek soils are somewhat poorly drained, subject to occasional flooding, and medium textured. They are in high flood plain positions. They are strongly salt and slightly sodium affected and support basin wildrye, streambank wheatgrass, and big sagebrush.

This map unit is used for meadow hay, winter grazing, and wildlife habitat. If irrigation water is available, this unit is suitable for native hay or improved pasture. It is moderately suitable for irrigated cropland, livestock grazing, and wildlife habitat. The main limitations are the flooding and seasonal high water table.

This unit is poorly suited to homesite development because of flooding, the seasonal high water table, low bearing strength, and slow percolation rate.

4. Wendane-Batan-Bubus

Level and nearly level, very deep, somewhat poorly drained, moderately well drained, and well drained soils on alluvial flats and alluvial flat remnants

This map unit is on broad valley bottoms in the Buffalo, Carico, Crescent, and Reese River Valleys. The vegetation is mainly basin wildrye, black greasewood, and rubber rabbitbrush on Wendane soils and bottlebrush squirreltail, black greasewood, and shadscale on Batan soils.

This map unit makes up about 11 percent of the survey area.

The Wendane series consists of somewhat poorly drained soils on alluvial flats. These soils have a thin, light-colored surface layer and are dominantly stratified medium textured and moderately fine textured throughout the profile. They are strongly salt and sodium affected. These soils are subject to common flooding during 1 or more years in 10 for a period of 2 days to 1 month or will pond water for long periods.

The Batan series consists of moderately well drained soils on alluvial flat remnants. These soils have a thin, light-colored surface layer and are dominantly stratified medium textured and moderately fine textured throughout the profile. They are strongly salt and sodium affected. Some of these soils are subject to common flooding at least 1 year in 10 for a period of 2 days to 1 month or will pond water for long periods.

The Bubus series consists of well drained soils on alluvial flat remnants. These soils have a thin, light-colored surface layer and are dominantly stratified, moderately coarse textured and medium textured throughout the profile. They are strongly salt and sodium affected. These soils are not subject to flooding.

Of minor extent in this map unit are Reese and Broyles soils. Reese soils are poorly drained, subject to occasional flooding, and moderately fine textured. They are on flood plain remnants or drainage channels. They are strongly salt and sodium affected and support basin wildrye and black greasewood. Broyles soils are well drained, not subject to flooding, and moderately coarse textured. They are on fan skirts. They are salt free to slightly salt affected in the upper part of the profile and slightly to strongly salt and sodium affected in the lower profile and support bottlebrush squirreltail and shadscale.

This map unit is used for livestock grazing, wildlife habitat, irrigated cropland, and homesite development. The main limitations to use for livestock grazing and as wildlife habitat are the low average annual precipitation and the strongly salt- and sodium-affected soil profiles.

Batan and Bubus soils are suitable for crops, pasture, and hay, if irrigation water is available and reclamation practices are used. Batan soils are poorly suited to homesite development; the main limitations are the slow percolation rates and low bearing strength. Bubus soils are moderately suited to homesite development; the main limitation is the moderate percolation rate in the substratum.

5. Tweba-Wendane

Level to gently sloping, very deep, somewhat poorly drained and moderately well drained soils on axial stream flood plains and alluvial flats

This map unit is in the north part of the survey area along Rock Creek. The vegetation is mainly basin wildrye, basin big sagebrush, and black greasewood on Tweba soils and basin wildrye and black greasewood on Wendane soils.

This map unit makes up less than 1 percent of the survey area.

The Tweba series consists of nearly level to gently sloping soils on incised axial stream flood plains. Stream channel entrenchment has altered the drainage to moderately well drained. These soils have a thin surface layer and dominantly stratified, moderately coarse textured and medium textured profiles. They are not salt or sodium affected. These soils are subject to rare flooding.

The Wendane series consists of somewhat poorly drained soils on nearly level alluvial flats. These soils have a thin, light-colored surface layer and are dominantly stratified medium textured and moderately fine textured throughout the profile. They are strongly salt and sodium affected. These soils are subject to occasional flooding.

Of minor extent in this unit are Doowak and Orovada

soils. Doowak soils are somewhat excessively drained, very gravelly coarse textured soils on gently sloping inset fans. They support basin wildrye, basin big sagebrush, and black greasewood. Orovada soils are well drained, moderately coarse textured and medium textured soils on nearly level fan skirts. These soils support Thurber needlegrass, bluebunch wheatgrass, and Wyoming big sagebrush. They are not salt or sodium affected or subject to flooding.

This unit is used for livestock grazing and wildlife habitat.

Areas Dominated by Soils on Fan Piedmonts and Fan Skirts

Seven map units are in this group. The soils in this group are dominantly on fan piedmonts and fan skirts. Elevations range from 4,600 feet in the northern part of the survey area to 6,400 feet in the southern part. The average annual precipitation is 7 to 10 inches, the average annual air temperature is 46 to 52 degrees F, and the frost-free season is 100 to 120 days.

These soils are nearly level to moderately steep and well drained. They are shallow or moderately deep over a hardpan or are very deep. These soils typically are not subject to flooding. Soils in the lower precipitation areas are salt and sodium affected to some degree.

Some of the soils are young (Holocene age) and exhibit leaching of carbonates and some weak silica cementation or durinodes. The older (Wisconsinan age) soils have horizons of clay accumulation over horizons with variable amounts of silica cementation. A few soils are very old (pre-Wisconsinan age) and have thick horizons of clay accumulation over indurated duripans. Erosion has truncated the profile of some of the very old soils, leaving only a remnant hardpan and new soils forming in the younger material overplacing the relict hardpan.

6. Broyles-Creemon-Wholan

Nearly level and gently sloping, very deep, well drained soils on fan skirts and inset fans

This map unit is in the Antelope, Carico, Crescent, Grass, and Reese River Valleys. The vegetation is mainly bottlebrush squirreltail, Indian ricegrass, shadscale, and bud sagebrush on the Broyles and Creemon soils and bottlebrush squirreltail and winterfat on the Wholan soil.

This map unit makes up about 8 percent of the survey area.

The Broyles series consists of nearly level to gently sloping soils on the highest fan skirts bordering the fan piedmont remnants. These soils have a thin, light-colored, medium textured surface layer and dominantly stratified, moderately coarse textured and medium textured subsoil and substratum. They have a salt- and sodium-free or slightly salt- and sodium-affected surface layer and subsoil and a slightly to moderately salt-affected and moderately to strongly sodium-affected substratum.

The Creemon series consists of nearly level soils on fan skirts near the high areas of drainage basins. These soils have a thin, light-colored, medium textured surface layer and a dominantly medium textured subsoil and substratum. The substratum is moderately salt and slightly sodium affected.

The Wholan series consists of nearly level soils on inset fans that shallowly dissect fan skirts and alluvial plains. These soils have a thin, light-colored, medium textured surface layer and a dominantly medium textured subsoil and substratum. They are not salt and sodium affected.

Of minor extent in this map unit are Orovada, Relley, and Misad soils. Orovada soils are medium textured and on nearly level to moderately sloping fan skirts that receive additional soil moisture from runoff. They have a slightly salt- and sodium-affected substratum and support Thurber needlegrass, bottlebrush squirreltail, and Wyoming big sagebrush. Relley soils are medium textured on nearly level fan skirts. They have a moderately salt- and slightly sodium-affected substratum and support bottlebrush squirreltail and shadscale. Misad soils are very gravelly, moderately coarse textured, and on nearly level to gently sloping inset fans. They have moderately to strongly salt-affected and moderately sodium-affected profiles and support bottlebrush squirreltail, black greasewood, and shadscale.

This map unit is used for livestock grazing, wildlife habitat, irrigated cropland, and homesite development. The main limitation is the low average annual precipitation. This map unit is suited to crops, pasture, and hay if an adequate, dependable water supply is available.

This unit is moderately suited to homesite development.

7. Orovada-Broyles-Shabliss

Nearly level to moderately steep, shallow or very deep, well drained soils on fan aprons, fan skirts, and fan piedmont remnants

This map unit is in the northern part of the survey area north of the Humboldt River and west of the Sheep Creek Range.

The vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush on Orovada and Shabliss soils and bottlebrush squirreltail,

Indian ricegrass, shadscale, and bud sagebrush on Broyles soils.

This map unit makes up about 3 percent of the survey area.

The Orovada series consists of very deep soils on gently sloping to moderately sloping fan aprons and upper fan skirts. These soils have a thin, moderately coarse textured surface layer and a dominantly stratified, moderately coarse textured and medium textured subsoil and substratum. They have a slightly or moderately salt-affected substratum.

The Broyles series consists of very deep soils on nearly level to moderately sloping, lower fan skirts bordering the Humboldt River meander belt. These soils have a thin, light-colored, medium textured surface layer and a dominantly stratified moderately coarse textured and medium textured subsoil and substratum. They have a slightly to moderately salt-affected and moderately to strongly sodium-affected substratum.

The Shabliss series consists of shallow soils on moderately steep, nonburied, erosional side slopes of fan piedmont remnants. These soils have a thin, medium textured surface layer and a medium textured subsoil over a strongly silica-cemented hardpan. These soils are not salt affected.

Of minor extent in this unit are Goldrun and Blackhawk soils. Goldrun soils are very deep, excessively drained, coarse textured soils on nearly level to gently sloping sand sheets and semistablized dunes. They support western wheatgrass, Indian ricegrass, and big sagebrush. Blackhawk soils are shallow, well drained soils on gently sloping to moderately sloping erosional fan piedmont remnants. They have a medium textured profile over a strongly silica-cemented hardpan and support bottlebrush squirreltail, shadscale, and bud sagebrush.

This map unit is used for livestock grazing, wildlife habitat, and irrigated cropland.

8. Beoska-Broyles-Whirlo

Nearly level to moderately sloping, very deep, well drained soils on fan piedmont remnants, fan skirts, and inset fans

This map unit borders the mountains flanking the Carico Lake and Reese River Valleys and the southern side of Buffalo Valley. The vegetation is bottlebrush squirreltail, shadscale, and bud sagebrush.

This map unit makes up about 12 percent of the survey area.

The Beoska series consists of gently sloping to moderately sloping soils on fan piedmont remnants. These soils have a thin, light-colored, medium textured surface layer; a medium to moderately fine textured subsoil; and a gravelly, moderately coarse to medium textured substratum. They have a moderately salt-affected and slightly sodium-affected subsoil and a strongly salt- and sodium-affected substratum.

The Broyles series consists of nearly level to moderately sloping soils on fan skirts. These soils have a thin, light-colored, medium textured surface layer and a moderately coarse and medium textured subsoil and substratum. They have a slightly salt-affected surface layer and subsoil and a moderately salt- and slightly sodium-affected substratum.

The Whirlo series consists of nearly level to gently sloping soils on inset fans. These soils have a thin, light-colored, medium textured surface layer and very gravelly, moderately coarse textured subsoil and substratum. They have a slightly salt-affected subsoil and a moderately salt- and slightly sodium-affected substratum.

Of minor extent in this unit are Kingingham, Wholan, and Orovada soils. Kingingham soils are moderately deep, well drained soils on erosional fan piedmont remnants. They have a fine textured, sodium-affected subsoil over an indurated duripan and support bottlebrush squirreltail, shadscale, and bud sagebrush. Wholan soils are very deep, well drained, subject to rare or occasional flooding, medium textured, and on nearly level, slightly convex inset fans. They are not salt or sodium affected and support Indian ricegrass and winterfat. Orovada soils are very deep, well drained, subject to rare flooding, medium textured, and on gently sloping to moderately sloping fan aprons. They are not salt or sodium affected and support Thurber needlegrass, bluebunch wheatgrass, and Wyoming big sagebrush.

This unit is used for livestock grazing and wildlife habitat. The main limitation is the low average annual precipitation. On Kingingham soils, the moderately salt- and slightly sodium-affected subsoil also is a limitation.

9. Ricert-Orovada-Tenabo

Nearly level to moderately sloping, shallow and very deep, well drained soils on fan piedmont remnants and fan skirts

This map unit flanks the mountains along the north sides of Buffalo and Crescent Valleys and extends from the mountains to the edge of the semibolson of Antelope Valley. The vegetation is mainly bottlebrush squirreltail, Indian ricegrass, shadscale, and bud sagebrush.

This map unit makes up about 8 percent of the survey area.

The Ricert series consists of very deep soils on gently sloping to moderately sloping, lower fan

piedmont remnants. These soils have a thin, light-colored, medium textured surface layer; a fine textured subsoil; and a very gravelly, moderately coarse textured substratum. They have a moderately sodium-affected subsoil and a slightly salt- and strongly sodium-affected substratum.

The Orovada series consists of very deep soils on nearly level to moderately sloping fan skirts. These soils have a thin, light-colored, medium textured surface layer and a very gravelly, moderately coarse textured subsoil and substratum. They have a slightly salt-affected subsoil and a moderately salt- and slightly sodium-affected substratum.

The Tenabo series consists of shallow soils on nearly level to gently sloping, higher, erosional fan piedmont remnants. These soils have a thin, light-colored, medium textured surface layer and a moderately fine textured subsoil over an indurated hardpan. They have a slightly to moderately sodium-affected subsoil.

Of minor extent in this unit are Broyles and Batan soils. Broyles soils are very deep, well drained, medium textured soils on nearly level to gently sloping inset fans and fan skirt margins. They have a slightly salt- and sodium-affected surface layer and subsoil and a slightly to moderately salt-affected and moderately to strongly sodium-affected substratum and support bottlebrush squirreltail, Indian ricegrass, and shadscale. Batan soils are very deep, moderately well drained, medium to moderately fine textured, and on nearly level alluvial flat remnants. They have strongly salt- and sodium-affected profiles and support bottlebrush squirreltail, shadscale, and black greasewood. These soils are not subject to flooding.

This map unit is used for livestock grazing and as wildlife habitat. The main limitations are the low average annual precipitation and the salt- and sodium-affected surface layer and subsoil.

10. Boulflat-Orovada

Gently sloping and moderately sloping, moderately deep and very deep, well drained soils on fan piedmont remnants and fan skirts

This map unit is located on the north boundary of the survey area flanking both sides of the Rock Creek flood plain. The vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush.

This map unit makes up about 2 percent of the survey area.

The Boulflat series consists of moderately deep soils on gently sloping to moderately sloping fan piedmont remnants. These soils have a thin, medium textured surface layer and a medium to moderately fine textured subsoil over a strongly silica-cemented hardpan. These soils are not salt or sodium affected.

The Orovada series consists of very deep soils on gently sloping to moderately sloping fan skirts. These soils have a thin, medium textured surface layer and a moderately coarse and medium textured subsoil and substratum. They have a slightly salt- and sodium-affected substratum.

Of minor extent in this unit are Goldrun, Blacka, and Blackhawk soils. Goldrun soils are very deep, excessively drained, coarse textured, and on gently sloping to moderately sloping sand sheets and semistablized dunes. They support western wheatgrass, Indian ricegrass, and big sagebrush. Blacka and Blackhawk soils are moderately deep, well drained soils on strongly sloping, erosional fan piedmont remnants. They have a moderately coarse textured profile over a strongly silica-cemented hardpan and support bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush. These soils are not salt or sodium affected.

This map unit is used for livestock grazing and as wildlife habitat. The main limitation is the moderately low average annual precipitation.

11. Buffaran-Allor-Chiara

Gently sloping to strongly sloping, shallow and very deep, well drained soils on fan piedmont remnants and fan skirts

This map unit flanks the Toiyabe Range in Carico and Grass Valleys and the west side of the Sheep Creek Range along the Humboldt River Valley. The vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush.

This map unit makes up about 5 percent of the survey area.

The Buffaran series consists of shallow soils on gently sloping to moderately sloping, higher erosional fan piedmont remnants. These soils have a thin, light-colored, stony, medium textured surface layer and a fine textured subsoil over an indurated hardpan. They are not salt or sodium affected.

The Allor series consists of very deep soils on gently sloping to strongly sloping, broad fan piedmont remnants. These soils have a thin, gravelly, medium textured surface layer; a gravelly, fine textured subsoil; and a gravelly, moderately coarse and medium textured substratum. They are not salt or sodium affected.

The Chiara series consists of very deep soils on gently sloping to moderately sloping fan skirts. These soils have a thin, moderately coarse textured surface layer and a dominantly stratified, moderately coarse and

medium textured subsoil and substratum. They have a slightly to moderately salt-affected substratum.

Of minor extent in this map unit are Whirlo and Ricert soils. Whirlo soils are very deep, very gravelly, moderately coarse and medium textured soils on nearly level to gently sloping, lower inset fans and fan skirts. They have a slightly salt-affected subsoil and a moderately salt- and slightly sodium-affected substratum. Ricert soils are very deep, medium and moderately fine textured, and on nearly level to gently sloping lower fan piedmont remnants. They have a moderately salt-affected and a moderately to strongly sodium-affected subsoil and substratum. Both of these soils support bottlebrush squirreltail, shadscale, and bud sagebrush.

This map unit is used for livestock grazing and as wildlife habitat.

12. Bioya-Chiara-Cortez

Gently sloping to strongly sloping, shallow and moderately deep, well drained soils on fan piedmont remnants

This map unit is in the north part of the survey area on the broad Sheep Creek Range plateau. The vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush.

This map unit makes up about 3 percent of the survey area.

The Bioya series consists of moderately deep soils on gently sloping to moderately sloping, lower fan piedmont remnants. These soils have a thin, medium textured surface layer and medium textured subsoil over an indurated hardpan. They are not salt or sodium affected.

The Chiara series consists of shallow soils on gently sloping to moderately sloping, higher fan piedmont remnants. These soils have a thin, medium textured surface layer and a medium textured subsoil over an indurated hardpan. They are not salt or sodium affected.

The Cortez series consists of moderately deep soils on strongly sloping side slopes of fan piedmont remnants. These soils have a thin, light-colored, medium textured surface layer and a fine textured subsoil over an indurated hardpan. The subsoil is moderately sodium affected.

Of minor extent in this map unit are Alley, Trunk, and Orovada soils. These soils support plant communities similar to those on the major soils and are not salt or sodium affected. Alley soils are very deep, moderately fine textured soils. Trunk soils are deep, fine textured soils. These soils are on steep and very steep plateau side slopes near the boundary of the Tuscarora soil survey area. Orovada soils are very deep, moderately coarse textured, and on gently sloping fan aprons.

This map unit is used for livestock grazing and as wildlife habitat. The main limitations are the moderately low average annual precipitation and the moderate water-supplying capacity of the soil profile. On Cortez soils, the sodium-affected subsoil is a limitation.

Areas Dominated by Soils on Foothills and Low Mountains

Six map units are in this group. The soils in this group are dominantly on foothills and low mountains. Elevations range from 4,800 feet at the base of foothills in the northern part of the survey to 8,600 feet on peaks in the low mountains in the southern part. The average annual precipitation is 7 to 12 inches, the average annual air temperature is 42 to 49 degrees F, and the frost-free season is 80 to 110 days.

These soils are gently sloping to very steep and well drained. They are shallow or moderately deep over a hardpan or bedrock or the soils are very deep. These soils are not subject to flooding and are not salt or sodium affected.

Some of the soils are young (Holocene aged) and exhibit either no soil profile development or only a minimal amount of carbonate leaching. The surface of these soils has been severely eroded. The older (Wisconsinan aged) soils have horizons of clay accumulation over horizons that have variable amounts of silica cementation. A few soils are very old (pre-Wisconsinan aged) and have thick horizons of clay accumulation over indurated duripans.

13. McVegas-Stingdorn-Old Camp

Gently sloping to steep, shallow, well drained soils on foothills

This map unit is on the dry foothills on the north and east sides of the Fish Creek Range and on small isolated hills in the Antelope and Reese River Valleys. The vegetation is mainly bottlebrush squirreltail, Indian ricegrass, and shadscale on McVegas and Stingdorn soils and bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush on Old Camp soils.

This map unit makes up about 2 percent of the survey area.

The McVegas series consists of shallow soils on moderately steep, concave, south-facing side slopes of foothills. These soils have a thin, light-colored, very cobbly, medium textured surface layer and a very cobbly, fine textured subsoil over a strongly silica-cemented hardpan capping hard bedrock. The subsoil is slightly salt affected and moderately to strongly sodium affected.

The Stingdorn series consists of shallow soils on gently sloping to steep, rounded summits and side slopes of foothills. These soils have a thin, light-colored, very cobbly, medium textured surface layer and a very cobbly, moderately fine textured subsoil over an indurated hardpan capping hard bedrock. They are not salt or sodium affected.

The Old Camp series consists of shallow soils on moderately steep to steep, concave, north-facing side slopes on foothills. These soils have a thin, light-colored, very gravelly or cobbly, medium textured surface layer and a very gravelly, moderately fine textured subsoil over hard bedrock. They are not salt or sodium affected.

Of minor extent in this map unit are Bojo, Genaw, and Minat soils. Bojo soils are shallow, medium to moderately fine textured soils over hard bedrock. They are on gently sloping to moderately sloping summits of foothills. Genaw soils are shallow, medium to moderately fine textured soils over soft Tertiary sediments. They are on moderately sloping foothill summits. Minat soils are very deep, very gravelly, medium textured soils on steep, colluvial, foothill side slopes. These soils are not salt or sodium affected and support Thurber needlegrass, spiny hopsage, and Wyoming big sagebrush.

This map unit is used for livestock grazing and as wildlife habitat. The main limitations are the surface rock fragments and droughty soil profiles. On McVegas soils, the sodium-affected subsoil is also a limitation.

14. Puett-Wieland-Genaw

Gently sloping to strongly sloping, very deep, well drained soils on mountain valley fans and moderately steep and steep, shallow, well drained soils on low, rolling foothills

This map unit is in the southeast part of the survey area in the Toiyabe Range. The vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush and areas of Utah juniper and singleleaf pinyon pine.

This map unit makes up about 2 percent of the survey area.

The Puett series consists of shallow soils on moderately steep to steep foothill side slopes. These soils have a thin, medium textured surface layer and subsoil over soft Tertiary sedimentary rock.

The Wieland series consists of very deep soils on gently sloping to strongly sloping, mountain valley fan summits. These soils have a thin, gravelly, medium textured surface layer and a gravelly, fine textured subsoil.

The Genaw series consists of shallow soils on moderately sloping to strongly sloping, mountain valley fan and rolling foothill shoulders and moderately steep, mountain valley fan and rolling foothill side slopes. These soils have a thin, gravelly, medium textured surface layer and a gravelly medium to moderately fine textured subsoil over soft Tertiary sedimentary rock.

Of minor extent in this unit are Zoesta and Caniwe soils. Zoesta soils are very deep, fine textured soils on moderately sloping, higher mountain valley fans. They support Thurber needlegrass, bluebunch wheatgrass, and low sagebrush. Caniwe soils are very deep, medium to moderately fine textured soils on gently sloping to moderately sloping inset fans. These soils support bluebunch wheatgrass, Thurber needlegrass, and low sagebrush.

This map unit is used for livestock grazing and as wildlife habitat.

15. Tessfive-Puett-Genaw

Strongly sloping to steep, shallow, well drained soils on foothills and low mountains

This map unit occurs in small areas bordering Cortez Canyon, in the Fish Creek Basin, on Augusta Mountain, and in hills bordering the southwest part of Carico Lake Valley. The vegetation is mainly Indian ricegrass, Thurber needlegrass, and black sagebrush on Tessfive soils; Indian ricegrass, black sagebrush, and Wyoming big sagebrush on Puett soils; and bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush on Genaw soils.

This map unit makes up about 2 percent of the survey area.

The Tessfive series consists of shallow soils on strongly sloping to moderately steep, convex rolling hill summits and shoulders and moderately steep to steep, low mountain side slopes. These soils have a thin, gravelly, medium textured surface layer and substratum over interbedded limestone and Tertiary sedimentary rock.

The Puett series consists of shallow soils on steep, eroded, rolling foothill side slopes. These soils have a thin, light-colored, medium textured surface layer and substratum over soft Tertiary sedimentary rock.

The Genaw series consists of shallow soils on strongly sloping, concave, rolling foothill summits. These soils have a thin, gravelly, medium textured surface layer and a gravelly, medium to moderately fine textured subsoil over soft Tertiary sedimentary rock.

Of minor extent in this unit are Jung, Grina, and Perlor soils. Jung soils are shallow, very gravelly, fine textured soils on rounded, moderately sloping hill shoulders. They support Indian ricegrass, Sandberg bluegrass, and black sagebrush. Grina soils are shallow

and medium textured over interbedded hard limestone and soft Tertiary sediments on concave foothill side slopes. They support Sandberg bluegrass and Utah juniper. Perlor soils are shallow, medium textured, and on lower rolling hill summits. They support Indian ricegrass, shadscale, and bud sagebrush.

This map unit is used for livestock grazing and as wildlife habitat. The main limitation is the shallow depth to bedrock resulting in droughty soil profiles.

16. Robson-Akerue-Buffaran

Moderately sloping to steep, shallow, well drained soils on foothills and low mountains

This map unit is on the east side of Battle Mountain and the Shoshone Range near Crescent Valley. The vegetation is bluebunch wheatgrass, Indian ricegrass, low sagebrush, and black sagebrush on Robson soils and bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush on Akerue and Buffaran soils.

This map unit makes up about 3 percent of the survey area.

The Robson series consists of shallow soils on strongly sloping to steep, rounded, convex, foothill and mountain side slopes. These soils have a thin, cobbly or very gravelly, medium textured surface layer and a very cobbly, fine textured subsoil over hard bedrock.

The Akerue series consists of shallow soils on moderately steep, concave, foothill and low mountain side slopes. These soils have a thin, gravelly, medium textured surface layer and a very gravelly, fine textured subsoil over a thin, indurated hardpan capping hard bedrock.

The Buffaran series consists of shallow soils on moderately sloping, short, mountain valley fans. These soils have a thin, stony, medium textured surface layer and a fine textured subsoil over a thick indurated hardpan.

Of minor extent in this unit are Humdun, Wiskan, and Havingdon soils. Humdun soils are very deep, medium textured soils on steep, concave mountain side slopes. They support bluebunch wheatgrass and Wyoming big sagebrush. Wiskan soils are moderately deep, very gravelly, fine textured soils on steep, convex mountain side slopes. They support bluebunch wheatgrass and black sagebrush. Havingdon soils are deep, very gravelly, fine textured, and on steep, convex, mountain side slopes. They support bluebunch wheatgrass and Wyoming big sagebrush.

This map unit is used for livestock grazing and as wildlife habitat. The main limitation is the droughty soil profiles because of the shallow depth to bedrock or a hardpan.

17. Roca-Trunk-Alley

Moderately sloping to very steep, moderately deep and very deep, well drained soils on foothills

This map unit is in the north part of the survey area in the Sheep Creek Range. The vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, and big sagebrush.

This map unit makes up about 2 percent of the survey area.

The Roca series consists of moderately deep soils on moderately steep to steep, upper, south-facing foothill side slopes. These soils have a thin, cobbly, medium textured surface layer and a very cobbly, fine textured subsoil over hard bedrock.

The Trunk series consists of moderately deep soils on moderately sloping to strongly sloping foothill summits and moderately steep to steep foothill side slopes on other aspects. These soils have a thin, cobbly, medium textured surface layer and a fine textured subsoil over hard bedrock.

The Alley series consists of very deep soils on very steep foothill side slopes that have mainly west-facing aspects. These soils have a thin, extremely stony, moderately coarse textured surface layer; a gravelly, moderately fine textured subsoil; and a very cobbly and gravelly, medium textured substratum.

Of minor extent in this map unit are Rock outcrop and Orovada and Goldrun soils. Rock outcrop does not have vegetation and occurs as exposed rimrock along mountain shoulders; cliffs along very steep, eroded mountain side slopes; and scattered peaks. Orovada soils are very deep, well drained, medium textured, and on moderately sloping mountain valley fans. They have similar vegetation to the main components. Goldrun soils are very deep, somewhat excessively drained, coarse textured, and on moderately sloping to strongly sloping sand sheets. They support Indian ricegrass, western wheatgrass, and big sagebrush.

This map unit is used for livestock grazing and as wildlife habitat. The main limitation is the hazard of erosion.

18. Old Camp-Colbar-Reluctan

Strongly sloping to steep, shallow and moderately deep, well drained soils on low mountains

This map unit is in the southern half of the survey area in the Fish Creek and Augusta Mountains and the Shoshone and Toiyabe Ranges. The vegetation is mainly bluebunch wheatgrass, Thurber needlegrass, Wyoming big sagebrush, and black sagebrush on Old Camp soils; bluebunch wheatgrass and Wyoming big sagebrush on Colbar soils; and bluebunch wheatgrass,

Idaho fescue, and mountain big sagebrush on Reluctan soils.

This map unit makes up about 10 percent of the survey area.

The Old Camp series consists of shallow soils on strongly sloping to steep, west- and south-facing mountain summits and side slopes. These soils have a thin, very gravelly and very cobbly, medium textured surface layer and subsoil over hard bedrock.

The Colbar series consists of moderately deep soils on moderately steep to steep, lower, north- and east-facing mountain side slopes. These soils have a thin, very cobbly, medium textured surface layer and a gravelly, moderately fine textured subsoil over hard bedrock.

The Reluctan series consists of moderately deep soils on moderately steep to steep, higher, north- and east-facing mountain side slopes. These soils have a thick, dark, very gravelly and very cobbly, medium textured surface layer and a gravelly, moderately fine textured subsoil over hard bedrock.

Of minor extent in this unit are Walti, Genaw, and Laped soils. Walti soils are moderately deep, fine textured, and on moderately sloping, higher, concave mountain summits. They support Idaho fescue, Thurber needlegrass, and low sagebrush. Genaw soils are shallow, medium textured, and on strongly sloping, low, rolling hill remnants. They support bluebunch wheatgrass and Wyoming big sagebrush. Laped soils are shallow, medium textured, and on low foothill summits in the Augusta Mountains. They support Indian ricegrass, shadscale, and bud sagebrush.

This map unit is used for livestock grazing and as wildlife habitat. The main limitation is the surface rock fragments.

Areas Dominated by Soils on High Mountains

Four map units are in this group. The soils in this group are dominantly on high mountains. Elevations range from 4,900 feet at the base of mountains in the northern part of the survey area to above 9,600 feet on the mountain peaks of the Shoshone Range. The average annual precipitation is 10 to more than 16 inches, the average annual air temperature is 40 to 44 degrees F, and the frost-free season is less than 50 to 90 days.

These soils are gently sloping to very steep, well drained soils. They are shallow, moderately deep, or deep over hard bedrock or the soils are very deep. These soils are not subject to flooding and are not salt or sodium affected.

Some soils are young (Holocene age). Their only soil development is an organic matter enriched layer. Most of the soils are on older, geomorphic surfaces (Wisconsinan age) exhibiting organic matter enriched layers and a well developed subsoil that has a clay accumulation.

19. Sumine-Chen-Rock outcrop

Rock outcrop and gently sloping to steep, shallow and moderately deep, well drained soils on high mountains

This map unit is in the north part of the survey area in the Sheep Creek Range. The vegetation is mainly bluebunch wheatgrass, basin wildrye, and mountain big sagebrush on Sumine soils and Idaho fescue, bluebunch wheatgrass, and low sagebrush on Chen soils. Rock outcrop does not have vegetation.

This map unit makes up about 2 percent of the survey area.

The Sumine series consists of moderately deep soils on steep, mountain side slopes. These soils have a thick, dark, very stony, medium textured surface layer and a very gravelly and very cobbly, moderately fine textured subsoil over hard bedrock.

The Chen series consists of shallow soils on gently sloping to moderately sloping, concave mountain crests. These soils have a thick, dark, very gravelly, medium textured surface layer and a very gravelly and very cobbly, fine textured subsoil over hard bedrock.

Rock outcrop is exposed bedrock on mountain shoulders, cliffs along canyon walls, and scattered peaks.

Of minor extent in this map unit are Susie Creek soils and Rubble land. Susie Creek soils are deep, fine textured, and on gently sloping to strongly sloping, convex mountain crests and shoulders. They support bluebunch wheatgrass, Thurber needlegrass, and mountain big sagebrush. Rubble land consists of rock stripes and screes on mountain side slopes below Rock outcrop. Rubble land does not have vegetation.

This map unit is used for livestock grazing and as wildlife habitat.

20. Itca-Reluctan-Punchbowl

Moderately steep and steep, shallow and moderately deep, well drained soils on high mountains

This map unit is in the southern part of the survey area in the Toiyabe and Shoshone Ranges. The vegetation is mainly Indian ricegrass, Thurber needlegrass, and black sagebrush on Punchbowl soils; Idaho fescue, bluebunch wheatgrass, and mountain big sagebrush on Reluctan soils; and bluegrass, singleleaf pinyon pine, and Utah juniper on Itca soils.

This map unit makes up about 4 percent of the survey area.

The Itca series consists of shallow soils on moderately steep and steep, convex mountain crests and side slopes that have mainly eastern and high southern and western aspects. These soils have a thick, dark, very cobbly, medium textured surface layer and a very gravelly, fine textured subsoil over hard bedrock.

The Reluctan series consists of moderately deep soils on moderately steep and steep, concave mountain side slopes that have mainly northern aspects. These soils have a thick, dark, very gravelly and very cobbly, medium textured surface layer and a very gravelly, medium or moderately fine textured subsoil over hard bedrock.

The Punchbowl series consists of shallow soils on moderately steep and steep, lower mountain side slopes that have mainly southern and western aspects. These soils have a thin, very gravelly or extremely stony, medium textured surface layer and a gravelly, medium textured subsoil over hard bedrock.

Of minor extent in this unit are Softscrabble, Cleavage, and Hapgood soils and Rock outcrop. Softscrabble soils are very deep, very gravelly, moderately fine textured soils on higher, north-facing, concave mountain side slopes. In these areas, snow accumulates in winter and the soils support Idaho fescue, bluebunch wheatgrass, and snowberry. Cleavage soils are shallow, very gravelly, medium textured, and on gently sloping to moderately sloping windswept mountain crests. They support Idaho fescue, Webber ricegrass, and low sagebrush. Hapgood soils are very deep, very gravelly, medium textured, and on steep, north-facing snow pockets at high elevations near the southern boundary of the survey area. They support mountain brome, Idaho fescue, and snowberry. Rock outcrop is exposed rimrock along mountain shoulders, cliffs along canyon walls, and scattered peaks. Rock outcrop does not have vegetation.

This map unit is used for livestock grazing and as wildlife habitat. The main limitation is the surface rock fragments.

21. Quarz-Walti-Glean

Strongly sloping to steep, moderately deep and deep, well drained soils on high mountains

This map unit is in the Shoshone Range and on the Augusta and Battle Mountains. The vegetation is mainly Idaho fescue, bluebunch wheatgrass, mountain big sagebrush, and low sagebrush.

This map unit makes up about 12 percent of the survey area.

The Quarz series consists of moderately deep soils on moderately steep to steep, south- and west-facing mountain side slopes. These soils have a thick, dark, very gravelly, medium textured surface layer and an extremely gravelly, fine textured subsoil over hard bedrock.

The Glean series consists of deep soils on steep, concave, north-facing mountain side slopes. These soils have a very thick, dark, gravelly, medium textured surface layer and a very gravelly and very cobbly, moderately coarse and medium textured substratum over hard bedrock.

The Walti series consists of moderately deep soils on strongly sloping to moderately steep, convex, mountain crests and shoulders. These soils have a thick, cobbly, medium textured surface layer and a fine textured subsoil over hard bedrock.

Of minor extent in this unit are Reluctan, Cleavage, and Bucan soils and Rock outcrop. Reluctan soils are moderately deep, moderately fine textured, and on moderately steep, east-facing, mountain side slopes. They support Idaho fescue, bluebunch wheatgrass, and mountain big sagebrush. Cleavage soils are shallow, very gravelly, moderately fine textured, and on moderately sloping, windswept, mountain crests. They support Idaho fescue, Webber ricegrass, and low sagebrush. Rock outcrop is exposed bedrock on eroded mountain shoulders and on scattered peaks. Rock outcrop does not have vegetation. Bucan soils are deep, fine textured, and on moderately steep and steep, lower mountain slopes bordering Slaven Canyon. They support Thurber needlegrass, bluebunch wheatgrass, and Wyoming big sagebrush.

This map unit is used for livestock grazing and as wildlife habitat. It is suited to these uses.

22. Hapgood-Sumine-Cleavage

Moderately steep to very steep, shallow, moderately deep and very deep, well drained soils on high mountains

This map unit is in the Shoshone Range near Mt. Lewis. The vegetation is mainly Idaho fescue, bluebunch wheatgrass, and snowberry on Hapgood soils; bluebunch wheatgrass, basin wildrye, and mountain big sagebrush on Sumine soils; and Idaho fescue, Webber ricegrass, and low sagebrush on Cleavage soils.

This map unit makes up about 3 percent of the survey area.

The Hapgood series consists of very deep soils on steep and very steep, concave, northerly mountain side slopes. These soils have a very thick, dark, very gravelly, medium textured surface layer and a very gravelly and very cobbly, medium textured substratum.

The Sumine series consists of moderately deep soils on moderately steep to steep, southerly facing mountain

side slopes. These soils have a thick, dark, very gravelly, medium textured surface layer and a very gravelly, moderately fine textured subsoil over hard bedrock.

The Cleavage series consists of shallow soils on moderately steep to steep, convex, mountain crests and nose slopes. These soils have a thick, dark, very gravelly surface layer and a very gravelly, moderately fine textured subsoil over hard bedrock.

Of minor extent in this unit are Winada soils and Rock outcrop. Winada soils are moderately deep, moderately fine textured soils on higher, steep, convex, southerly facing mountain side slopes. They support Idaho fescue, bluebunch wheatgrass, and low sagebrush. Rock outcrop is exposed bedrock on mountain shoulders, exposed cliffs along canyon walls, and scattered peaks. Rock outcrop does not have vegetation.

This map unit is mainly used for livestock grazing and as wildlife habitat. The main limitation is the surface rock fragments.

Broad Land Use Considerations

The soils in this survey area vary widely in their potential for major land uses such as cropland, pasture, rangeland, wildlife habitat, and urban use. Extensive changes in land use are not expected in the foreseeable future.

About 95 percent of the land area is used as rangeland and for related uses. These areas need careful management. Map units 3 and 5 have the highest potential to produce forage. Because these units are near water and produce more palatable plants, they tend to be overused and the range deteriorates. The soils in map units 2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 are extensively used for range. On these soils the main limitation is generally the inadequate precipitation. On some of these soils, a hardpan or bedrock limits rooting depth. In other areas of these soils, rock fragments on the surface limit use of equipment. The soils in map units 16, 17, 18, 19, 20, 21, and 22 are well suited to range. In most areas of these soils, steepness of slope limits use of equipment. In some areas of these soils, rock fragments on the surface also limit use of equipment. On some soils in map units 16, 18, 20, and 22, the rooting depth is a limitation.

About 4 percent of the land in the survey area is used as irrigated cropland. Approximately 17 percent of the survey area is suitable for use as cropland if irrigation water were available. The main crops grown are alfalfa hay, alfalfa seed, improved grass-legume forage, and small grains, such as barley, wheat, and oats. Small areas in map units 3, 4, 6, and 7 are used as cropland. On the soils in map unit 3, the seasonal high water table and flooding are limitations. In the rest of map units 4, 6, and 7, no water available for irrigation is the primary limitation.

Most of the water must be pumped from deep strata wells. But wells that produce enough water for these uses are not easily found. The Duric Camborthids of map units 6 and 7 and the Durixerollic Camborthids of map unit 7 are well suited to climatically adapted plants. The short growing season limits the selection of plants. In most areas of the soils in these map units, irrigated crops can be grown if the salt and sodium content is controlled. The slope and the hazard of erosion limit some sloping soils in map units 6 and 7.

Approximately 1 percent of the land in the survey area is used for pasture and meadow hay. The soils in map unit 3 are extensively used for pasture and meadow hay. Most areas of these soils are well suited to this use. On some soils in these areas, the salt and sodium content is a limitation.

Almost all of the land in Lander County, North Part, provides habitat for one or more kinds of wildlife. The Humboldt River, the lower part of Rock Creek, and the Reese River support catfish, black bass, and carp. Several streams and small ponds in the area support trout.

Openland wildlife common to the area includes deer, pheasant, valley quail, cottontail rabbit, meadowlark, and killdeer. These species extensively use the soils, water sources, and the food and cover in the native meadows and pastures in map unit 3. Openland wildlife species also extensively use the irrigated areas and rangeland wildlife, the nonirrigated areas of map units 3, 4, 6, and 7. Watering places are needed when areas are not being irrigated. Fence rows, ditchbanks, and odd corners can be planted with selected plants to improve the habitat. The adjacent areas of range provide additional cover.

The wetland wildlife common to the area includes ducks, geese, herons, muskrat, and beaver. Only map unit 3 has extensive areas of habitat for wetland wildlife. The soils in that map unit support wetland plants. Shallow water areas can be established on the nearly level areas but not on the more sloping areas. Stream entrenchment has drained some areas, which are now poorly suited to use as habitat for wetland wildlife.

The rangeland wildlife common to the area include antelope, mule deer, jackrabbit, chukar, and sage grouse. They extensively use the rest of the map units. In much of the lower elevations of this area, the low precipitation limits the native plant community. Properly designed and located watering facilities benefit wildlife.

Detailed Soil Map Units

The map units delineated on the detailed maps at the back of this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and limitations of a unit for specific uses. The soil properties and characteristics described can be used to plan the management needed for those or other uses. More information is given under "Use and Management of the Soils" and "Soil Properties."

A map unit delineation on a map represents an area dominated by one or more major kinds of soils or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans. But if intensive use of small areas is planned, onsite investigation to precisely define and locate the soils and miscellaneous areas is needed. Some delineations joining the Tuscarora Mountain soil survey area have soil names, map unit components, or physiographic positions that are not exactly the same between the two survey areas. These differences stem primarily from a present-day, better understanding of soil relationships. Although some differences exist, there should be little or no effect in the use of these surveys for management purposes.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes facts about the unit and gives the principal hazards or limitations to be considered in planning for a few specific uses. Soil suitability ratings are given for selected uses, including range seeding; roadfill; daily cover for landfill; shallow excavations; local roads and streets; pond reservoir areas; embankments, dikes, and levees; sand; and gravel. The "Appendix" lists criteria used to develop these ratings.

The detailed soil map units mapped in the survey area reflect the various relationships of soils and component parts of the landscape. Figures 6 and 7 show the soil-physiographic relationship of the survey area on a three-dimensional basis, in contrast to the two-dimensional presentation of the soil map.

Figure 6 shows some delineations in various positions on the landscape.

Each map unit has one or more major soil components and generally has several contrasting inclusions. Figure 7 shows the physiographic position of each major soil component identified within the respective map units.

The unique physiographic position is given in the map unit descriptions for each soil or miscellaneous area identified.

Soils that have profiles that are almost alike make up a *soil series*. The soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of one series can differ in texture of the upper layer or underlying layers. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Sonoma silt loam, drained, is one of several phases of the Sonoma soils.

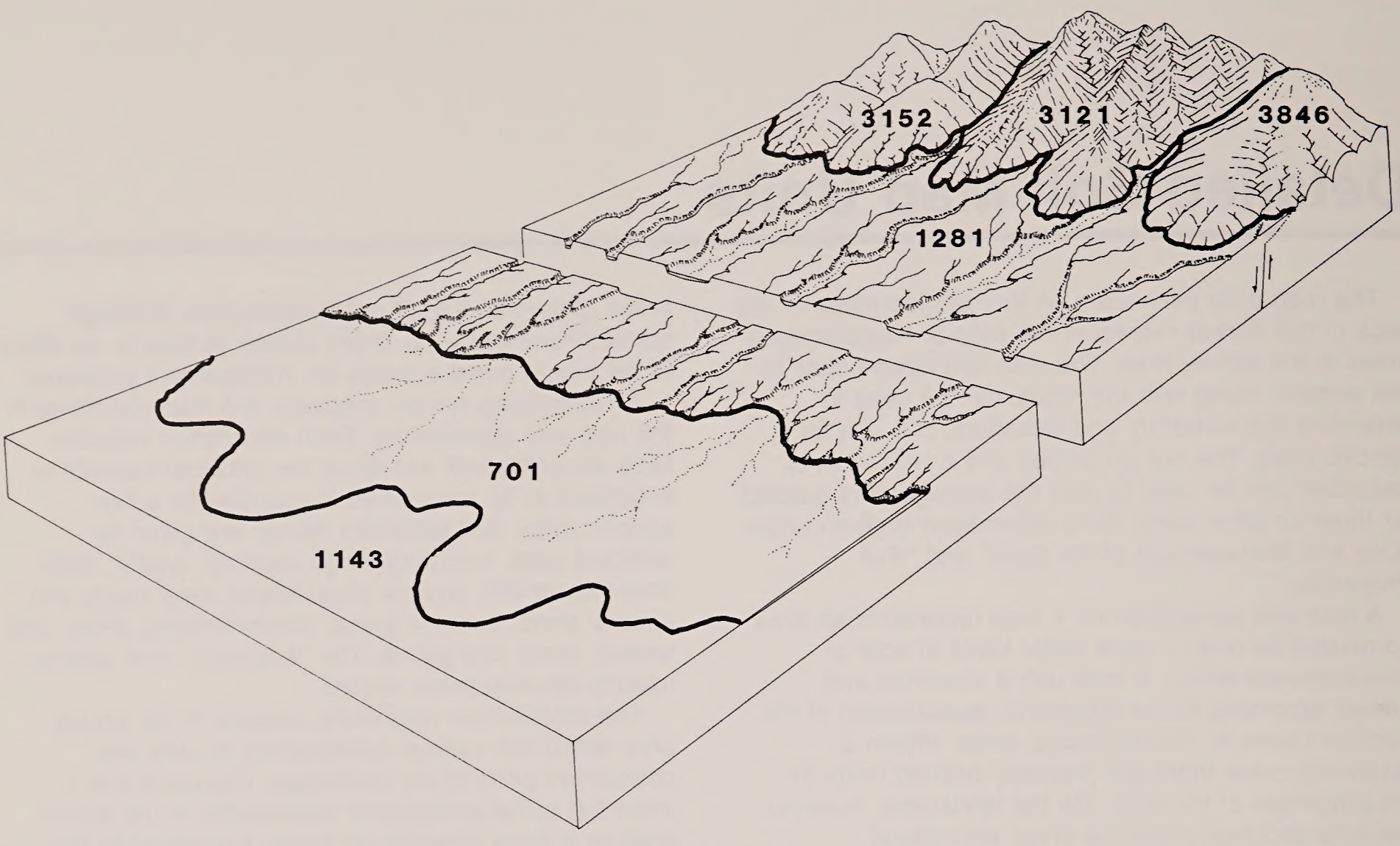

Figure 6.—Typical relationship of detailed soil map units and landscapes: Orovada fine sandy loam, 2 to 4 percent slopes (701); Wendane silt loam, occasionally flooded (1143); Ricert-Whirlo-Pineval association (1281); Walti-Softscrabble-Bucan association (3121); Robson-Reluctan association (3152); and Jung-Wiskan association (3846).

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or associations.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Argenta-Sonoma complex is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Punchbowl-Roca-Rock outcrop association is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Playas are an example.

Some areas that are too small to be shown are identified by a special ad hoc symbol on the soil maps.

The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

This survey was mapped at two levels of detail. At the most detailed level, map unit boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map unit boundaries were plotted and verified at wider intervals. The narrowly defined unit indicator is an asterisk in the map legend. The detail of mapping was selected and the map units were designed to meet the needs for the anticipated long-term use of the survey.

Table 4 gives the acreage and proportionate extent of each map unit.

In the map unit descriptions that follow, a semitabular format is used. It uses an uppercase heading, centered in the column (for example, Composition), in identifying the information grouped directly below it. Introducing each item of information under the centered heading is

an italicized term or phrase (for example, Contrasting Inclusions) that identifies or describes the information. Many of the centered headings and introductory terms or phrases are self-explanatory; however, some of them need further explanation and are defined in the Glossary. Some explanations are provided in the following paragraphs, generally in the order in which they are used in the map unit descriptions. More information is given under "Use and Management of the Soils" and "Soil Properties."

Map unit setting is given for the entire map unit; it includes position on landscape, elevation, and climate. The position on landscape generally is broader than that given for each major component. The elevation and climatic data apply to the entire unit and are not given for the individual components.

Composition is given for the components identified in the name of the map unit as well as for the contrasting inclusions.

Inclusions are areas of components (soils or miscellaneous areas) that differ from the soils or miscellaneous areas for which the unit is named. Inclusions can be either *similar* or *contrasting*. Similar inclusions are components that differ from the components for which the unit is named but that for purposes of use and management can be considered to be the same as the named components. Note that in the "Composition" paragraph a single percentage is provided for a named soil and the similar inclusions because their use and management are similar.

Contrasting inclusions are components that differ sufficiently from the components for which the unit is named that they would have different use and management if they were extensive enough to be managed separately. For most uses, contrasting inclusions have a limited effect on use and management. Inclusions, which are generally in small areas, could not be mapped separately because of the scale used in mapping. A special symbol identifies some small areas of strongly contrasting inclusions on

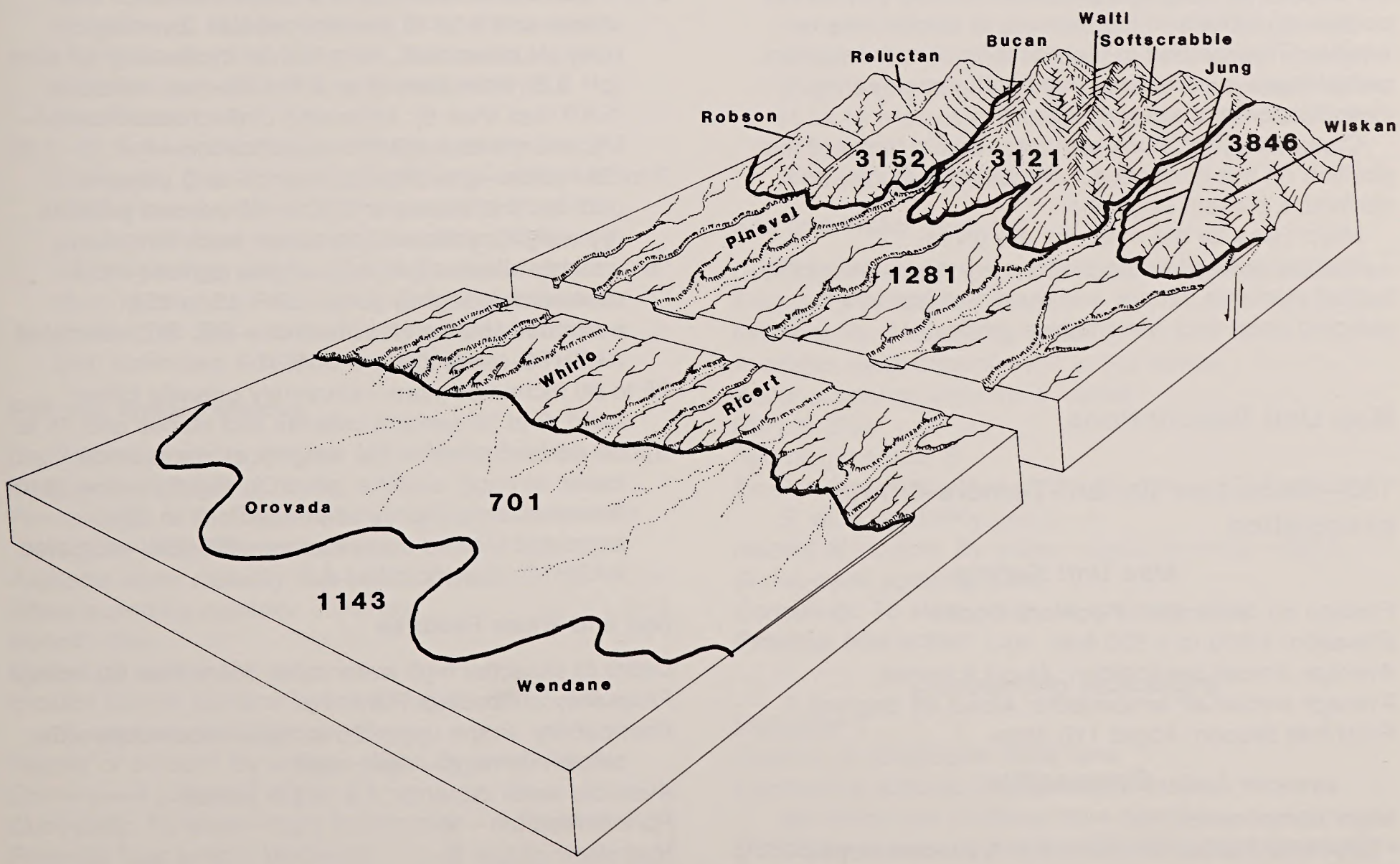

Figure 7.—Typical relationship of detailed soil map units and landscapes: Orovada fine sandy loam, 2 to 4 percent slopes (701); Wendane silt loam, occasionally flooded (1143); Ricert-Whirlo-Pineval association (1281); Walti-Softscrabble-Bucan association (3121); Robson-Reluctan association (3152); and Jung-Wiskan association (3846).

the detailed soil maps. A few inclusions may not have been observed and consequently are not mentioned in the descriptions. This was especially likely to happen where the pattern was so complex that it was impractical to make enough observations to identify all the inclusions on the landscape.

Characteristics of the soil are given for position on landscape, parent material, slope features, and dominant present vegetation. Also given for each component soil is the typical block profile and important soil properties.

Capsule descriptions include the content of rock fragments in each soil layer. Rock fragment amounts are given as a percentage of the soil by weight. Care must be taken in the interpretation of rock fragment percentages as it is given in this survey. The percentage of rock fragments that are more than 3 inches in diameter is given for the whole soil. After the cobbles, stones, and boulders (rock fragments more than 3 inches in diameter) are accounted for, the soil material and the pebbles (rock fragments less than 3 inches in diameter) are considered separately. Thus, the percent by weight of pebbles is based only on the content of pebbles in the material of pebble size or smaller. This method of identification of rock fragment percentages is commonly used in the engineering classification and analysis of soils.

Contrasting inclusions are described in terms of their position on the landscape, contrasting features, and distinctive present vegetation.

Major uses for the map unit are given.

Component soil interpretations are given for *wildlife habitat elements, ratings and restrictive features for selected uses,* and *interpretative groups.*

Map Unit Descriptions

102—Beowawe Variant-Tomera-Whirlo association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Beowawe Variant silt loam, 4 to 8 percent slopes—Typic Natrargids, fine-loamy over sandy or sandy-skeletal, mixed, mesic—30 percent
• Tomera gravelly loam, 8 to 15 percent slopes—Xerollic Natrargids, fine, montmorillonitic, mesic—30 percent
• Whirlo gravelly sandy loam, 4 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 4 to 15 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—10 percent
• Inclusion 2: Xeric Torriorthents, 2 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Beowawe Variant Soil

Position on landscape: Fan drainageways of slightly dissected parts of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—silt loam; 0 to 5 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

7 to 25 inches—gravelly clay loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); prismatic structure; hard, firm; very strongly alkaline (pH 9.2); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6, A-7

25 to 60 inches or more—extremely gravelly loamy sand; 0 to 10 percent cobbles and stones and 75 to 85 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 9.0); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: In the upper 25 inches—moderately slow; below this depth—very rapid
Available water capacity: 4.9 to 5.5 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—3; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Tomera Soil

Position on landscape: Summits and side slopes of fan piedmont remnants
Parent material: Mixed sedimentary alluvium with component of pyroclastic material
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass

Typical Profile

0 to 8 inches—gravelly loam; 25 to 50 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, GM, SM-SC, GM-GC; estimated AASHTO classification—A-2, A-4
8 to 33 inches—gravelly sandy clay, gravelly clay; 30 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; strongly alkaline (pH 8.8); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 30); estimated Unified classification—SC, CH; estimated AASHTO classification—A-7
33 to 60 inches or more—extremely gravelly sandy loam, very gravelly loamy sand, very cobbly loam; 1 to 40 percent cobbles and stones and 55 to 70 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 13 to 30); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 33 inches—slow; below this depth—moderately rapid
Available water capacity: 5.6 to 7.1 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Moderate

Characteristics of the Whirlo Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile

0 to 7 inches—gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
7 to 13 inches—gravelly sandy loam, gravelly loam, fine sandy loam; 0 to 10 percent cobbles and stones and 15 to 45 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2, A-4
13 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 5 to 30 percent cobbles and stones and 50 to 75 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.9 to 5.3 inches
Water-supplying capacity: 6 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Inset fans
Contrasting features: Occasionally flooded, receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage
Inclusion 2
Position on landscape: Adjacent to inset fan channels

Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, bluebunch wheatgrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of Beowawe Variant soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of Tomera soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Beowawe Variant Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, shrink-swell
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Tomera Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—hard to pack
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—shrink-swell, low strength
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Beowawe Variant soil—IVe, irrigated, and VIIs, nonirrigated; Tomera soil—VIs, nonirrigated; Whirlo soil—IIIe, irrigated, and VIIc, nonirrigated
Range site: Beowawe Variant soil—024X020N; Tomera soil—024X005N; Whirlo soil—024X002N

112—Millerlux-Reluctan-Cleavage association

Map Unit Setting

Position on landscape: Mountains and plateaus
Elevation: 6,200 to 6,900 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days

Composition

Major components:
• Millerlux gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, clayey, montmorillonitic, frigid—35 percent
• Reluctan gravelly loam, 15 to 30 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—30 percent
• Cleavage very gravelly loam, 15 to 50 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Quarz very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 2: Rock outcrop—5 percent
• Inclusion 3: Cleavage extremely gravelly loam, 4 to 15 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 4: Cumulic Haploxerolls, 2 to 4 percent slopes—Cumulic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Millerlux Soil

Position on landscape: Summits of plateaus
Parent material: Kind—residuum slightly influenced by loess; source—basalt and tuffs
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, bluebunch wheatgrass, Thurber needlegrass

Typical Profile

0 to 10 inches—gravelly loam; 5 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4

10 to 15 inches—clay; 0 to 10 percent cobbles and stones and 0 to 15 percent pebbles (by weight); prismatic structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH; estimated AASHTO classification—A-7

15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.0 to 2.4 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Reluctan Soil

Position on landscape: North-facing and east-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—rhyolite and other extrusive volcanic rock
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Idaho fescue
Surface cover: 15 percent pebbles, 5 percent cobbles

Typical Profile

0 to 13 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4

13 to 38 inches—gravelly clay loam, gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

38 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.4 to 5.6 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Cleavage Soil

Position on landscape: Shoulders and upper side slopes of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, black sagebrush, bluebunch wheatgrass

Typical Profile

0 to 4 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2, A-4, A-6

4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 25 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow

Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: South-facing and west-facing side slopes of mountains
Contrasting features: Moderately deep soil that has a very gravelly clayey subsoil
Distinctive present vegetation: Mountain big sagebrush
Inclusion 2
Position on landscape: Scattered peaks and escarpments along canyon walls
Contrasting features: Bedrock exposed at the surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Crests of mountains
Contrasting features: Slopes of 4 to 15 percent and an extremely gravelly surface layer
Distinctive present vegetation: Low sagebrush, Idaho fescue
Inclusion 4
Position on landscape: Drainageways and canyon bottoms of mountains
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Millerlux soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Millerlux Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, hard to pack, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, low strength, slope
Roadfill: Poor—depth to bedrock, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Reluctan Soil for Selected Uses
Range seeding: Fair—small stones, rooting depth, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Cleavage Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Millerlux soil—VIIe, nonirrigated; Reluctan soil—VIIe, nonirrigated; Cleavage soil—VIIs, nonirrigated
Range site: Millerlux soil—024X018N; Reluctan soil—024X021N; Cleavage soil—024X027N

120—Alyan-Graley-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,500 to 7,500 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Alyan gravelly loam, 4 to 15 percent slopes—Aridic Argixerolls, fine, montmorillonitic, frigid—50 percent
• Graley very gravelly loam, 30 to 50 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—25 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Puett fine sandy loam, 30 to 50 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—5 percent
• Inclusion 2: Welch silt loam, drained, rarely flooded, 0 to 2 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed, frigid—5 percent

Characteristics of the Alyan Soil

Position on landscape: Crests and shoulder slopes of mountains
Parent material: Kind—residuum; source—rhyolite, andesite, and siliceous tuffs
Slope features: Length—short; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Thurber needlegrass
Typical cover: 20 percent pebbles, 5 percent cobbles

Typical Profile

0 to 10 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC, CL-ML, CL; estimated AASHTO classification—A-2, A-4, A-6
10 to 16 inches—clay; 0 to 5 percent cobbles and stones and 15 to 25 percent pebbles (by weight); prismatic structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
16 to 24 inches—gravelly clay; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); prismatic structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL, CH; estimated AASHTO classification—A-7
24 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 3.8 to 4.4 inches
Water-supplying capacity: 11 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Graley Soil

Position on landscape: Side slopes of mountains
Parent material: Mixed colluvium over residuum
Slope features: Length—long; shape—convex to smooth
Dominant present vegetation: Mountain big sagebrush, antelope bitterbrush, Idaho fescue, bluebunch wheatgrass

Typical Profile

0 to 7 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 60 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
7 to 14 inches—very gravelly clay, very gravelly clay loam; 0 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.3 to 1.8 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of Rock Outcrop

Position on landscape: Rimrock on shoulders and random peaks on crests of mountains

Slope features: Length—short; shape—convex
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Position on landscape: Eroded low hills bordering the mountain front
Contrasting features: Lacks a layer of clay accumulation, shallow to soft bedrock
Distinctive present vegetation: Black sagebrush, Wyoming big sagebrush, Indian ricegrass
Inclusion 2
Position on landscape: Narrow drainageways of mountains
Contrasting features: Very deep soils, a seasonal high water table at a depth of 60 to 96 inches
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Alyan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Graley soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Alyan Soil for Selected Uses
Range seeding: Fair—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, hard to pack
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—shrink-swell
Roadfill: Severe—depth to bedrock, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Graley Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, too clayey, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, depth to bedrock, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Alyan soil—VIs, nonirrigated; Graley soil—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Alyan soil—025X014N; Graley soil—025X012N

130—Alley-Dewar association

Map Unit Setting

Position on landscape: Foothills and mountain valley fans
Elevation: 5,000 to 5,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Alley cobbly fine sandy loam, 30 to 50 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—60 percent
• Dewar very cobbly very fine sandy loam, 4 to 15 percent slopes—Xerollic Durargids, loamy, mixed, mesic, shallow—25 percent
Contrasting inclusions:
• Inclusion 1: Alley extremely stony fine sandy loam, 50 to 75 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—10 percent
• Inclusion 2: Rock outcrop—5 percent

Characteristics of the Alley Soil

Position on landscape: Side slopes of foothills
Parent material: Kind—colluvium and alluvium influenced by loess; source—andesite, basalt, and tuff
Slope features: Length—long; shape—concave to smooth
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass

Typical Profile

0 to 3 inches—cobbly fine sandy loam; 25 to 30 percent cobbles and stones and 10 to 20 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4
3 to 16 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated

Unified classification—SC, GC; estimated AASHTO classification—A-6

16 to 40 inches—gravelly fine sandy loam, cobbly fine sandy loam; 0 to 40 percent cobbles and stones and 20 to 50 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2, A-4

40 to 60 inches or more—very cobbly fine sandy loam; 30 to 45 percent cobbles and stones and 30 to 40 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 6.0 to 7.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—4
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Dewar Soil

Position on landscape: Crests of mountain-valley fan remnants adjacent to foothills
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass

Typical Profile

0 to 4 inches—very cobbly very fine sandy loam; 40 to 50 percent cobbles and stones and 20 to 35 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4

4 to 14 inches—cobbly silty clay loam; 25 to 30 percent cobbles and stones and 10 to 20 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

14 to 60 inches—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 13 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.9 to 2.3 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex side slopes of foothills below rimrock
Contrasting features: Extremely stony surface, slopes of more than 50 percent
Distinctive present vegetation: Wyoming big sagebrush, Sandberg bluegrass

Inclusion 2
Position on landscape: Rimrock and scattered peaks on foothills
Contrasting features: Bedrock exposed at the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Alley soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Dewar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Alley Soil for Selected Uses
Range seeding: Fair—large stones, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Dewar Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, low strength
Roadfill: Poor—cemented pan, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—large stones, cemented pan
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer, large stones

Interpretive Groups

Capability classification: Alley soil—VIs, irrigated, and VIIs, nonirrigated; Dewar soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Alley soil—024X005N; Dewar soil—024X005N

131—Alley-Rock outcrop-Rubble land association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 5,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Alley very cobbly very fine sandy loam, 50 to 75 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—45 percent
• Rock outcrop—25 percent
• Rubble land—20 percent
Contrasting Inclusions:
• Inclusion 1: Alley cobbly fine sandy loam, 30 to 50 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—5 percent
• Inclusion 2: Lithic Xerollic Haplargids, 0 to 4 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Alley Soil

Position on landscape: Side slopes of foothills
Parent material: Kind—colluvium and alluvium influenced by loess; source—volcanic rock
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass, spiny hopsage

Typical Profile

0 to 3 inches—very cobbly very fine sandy loam; 30 to 40 percent cobbles and stones and 30 to 50 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GM, SM-SC, SM; estimated AASHTO classification—A-2
3 to 16 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SC, GC; estimated AASHTO classification—A-6
16 to 40 inches—gravelly fine sandy loam, cobbly fine sandy loam; 0 to 40 percent cobbles and stones and 20 to 50 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2, A-4
40 to 60 inches or more—very cobbly fine sandy loam; 30 to 45 percent cobbles and stones and 30 to 40 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 6.0 to 7.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.05; T value—5; wind erodibility group—5
Hazard of erosion: By water—high; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of Rock Outcrop

Position on landscape: Rimrock on shoulders and scattered peaks of foothills

Slope features: Length—short; shape—convex
Dominant present vegetation: Barren

Characteristics of Rubble Land

Position on landscape: Rock stripes and scree on side slopes of foothills below Rock outcrop
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex upper side slopes of foothills
Contrasting features: Cobbly surface, slopes of less than 50 percent
Distinctive present vegetation: Wyoming big sagebrush, bluegrass
Inclusion 2
Position on landscape: Crests of foothills
Contrasting features: Hard bedrock within a depth of 20 inches
Distinctive present vegetation: Wyoming big sagebrush, bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Alley soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Alley Soil for Selected Uses
Range seeding: Poor—large stones, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Alley soil—VIIs, nonirrigated; Rock outcrop—VIIIs; Rubble land—VIIIs
Range site: Alley soil—024X005N

140—Antel silt loam

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,600 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Antel silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—10 percent
• Inclusion 2: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Antel Soil

Position on landscape: Fan skirts
Parent material: Kind—silty alluvium; source—volcanic rock, tuff, loess, and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, seepweed, bud sagebrush

Typical Profile

0 to 11 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—CL; estimated AASHTO classification—A-6
11 to 60 inches or more—stratified very fine sandy loam to silty clay; massive; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 35 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 9.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower margin of fan skirts
Contrasting features: Strongly salt- and sodium-affected surface layer

Distinctive present vegetation: Black greasewood, shadscale, bud sagebrush

Inclusion 2

Position on landscape: Smooth inset fans, which slightly dissect the fan skirts
Contrasting features: Nonsaline to a depth of 30 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland
Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Septic tank absorption fields: Severe—percs slowly
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

141—Antel silt loam, moderately sodic

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,600 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Antel silt loam, moderately sodic, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—10 percent
• Inclusion 2: Wholan silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—5 percent

Characteristics of the Antel Soil

Position on landscape: Fan skirts
Parent material: Kind—alluvium influenced by loess and volcanic ash; source—volcanic rock, tuffs
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, pepperweed

Typical Profile

0 to 11 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
11 to 60 inches or more—stratified very fine sandy loam to silty clay; massive; slightly hard, very friable; strongly alkaline (pH 9.0); moderately saline to strongly saline (8 to 25 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 9.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Slightly elevated areas on smooth fan skirts

Contrasting features: Weak discontinuous cementation in the substratum
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Adjacent smooth to slightly concave inset fans
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Winterfat, Indian ricegrass

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Erodes easily, excess sodium
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X002N

142—Antel silty clay loam

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,600 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Antel silty clay loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—10 percent
• Inclusion 2: Relley silty clay loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Antel Soil

Position on landscape: Fan skirts
Parent material: Kind—alluvium influenced by loess and volcanic ash; source—volcanic rock and tuffs
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, pepperweed, seepweed

Typical Profile

0 to 11 inches—silty clay loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—CL; estimated AASHTO classification—A-6

11 to 60 inches or more—stratified very fine sandy loam to silty clay; massive; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 35 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 9.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent inset fans
Contrasting features: Slightly coarser textured subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Upper margins of fan skirts and adjacent to inset fans
Contrasting features: Nonsaline to a depth of 30 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt
Drainage: Deep to water
Irrigation: Percs slowly, erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

143—Antel silty clay loam, occasionally flooded

Map Unit Setting

Position on landscape: Stream terraces
Elevation: 4,600 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Antel silty clay loam, 0 to 2 percent slopes, occasionally flooded—Duric Camborthids, fine-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Batan silt loam, 0 to 2 percent slopes, occasionally flooded—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—10 percent
• Inclusion 2: Creemon silt loam, 0 to 2 percent slopes, occasionally flooded—Duric Camborthids, coarse-silty mixed, mesic—5 percent

Characteristics of the Antel Soil

Position on landscape: Stream terraces
Parent material: Kind—alluvium influenced by loess and volcanic ash; source—volcanic rock and tuffs
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, basin big sagebrush, shadscale, black greasewood, basin wildrye

Typical Profile

0 to 11 inches—silty clay loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL; estimated AASHTO classification—A-6
11 to 60 inches or more—stratified very fine sandy loam to silty clay; massive; slightly hard, very friable; moderately alkaline (pH 8.2); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Frequency—occasional; duration—brief; months—February through June
Permeability: Moderately slow
Available water capacity: 9.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly higher lying, irregularly shaped outer margins of the stream terraces
Contrasting features: Rarely flooded

Distinctive present vegetation: Bud sagebrush, winterfat, saltbush

Inclusion 2

Position on landscape: Fan skirts adjacent to stream terraces
Contrasting features: Coarser textured subsoil
Distinctive present vegetation: Winterfat, shadscale, and bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Severe—flooding
Local roads and streets: Severe—low strength, flooding
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt
Drainage: Flooding
Irrigation: Flooding, excess sodium, erodes easily
Terraces: Erodes easily

Interpretive Groups

Capability classification: IIw, irrigated, and VIw, nonirrigated
Range site: 024X006N

150—Argenta very fine sandy loam

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Argenta very fine sandy loam, 0 to 2 percent slopes—Aeric Halaquepts, coarse-loamy, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Rixie silty clay loam, 0 to 2 percent slopes—Aquic Duric Haploxerolls, fine-loamy, mixed, mesic—5 percent
• Inclusion 2: Sonoma silty clay loam, strongly saline, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Wendane silt loam, 0 to 2 percent slopes, frequently flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Argenta Soil

Position on landscape: Broad flood plain remnants and adjacent to stream channels
Parent material: Kind—alluvium high in pyroclastic material; source—volcanic rock
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, saltbush, rabbitbrush, inland saltgrass

Typical Profile

0 to 7 inches—very fine sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 25 mmhos/cm); strongly sodic (SAR 50 to 65); estimated Unified classification—ML; estimated AASHTO classification—A-4
7 to 45 inches—stratified fine sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 25 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4
45 to 60 inches or more—gravelly sandy loam; 35 to 45 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: February through July—36 to 40 inches; rest of year—below this depth
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 6.5 to 9.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Depressions on flood plains
Contrasting features: Dark colored surface layer, slightly salt and sodium affected, frequently flooded
Distinctive present vegetation: Basin wildrye, creeping wildrye
Inclusion 2
Position on landscape: Narrow, lower flood plain remnants
Contrasting features: Finer textured subsoil, occasionally flooded
Distinctive present vegetation: Alkali sacaton, alkali muhly
Inclusion 3
Position on landscape: Alluvial flats on outer margins of flood plains
Contrasting features: Finer textured subsoil
Distinctive present vegetation: Alkali sacaton, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland
Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; grass and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—fair; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess sodium, excess salt
Drainage: Frost action
Irrigation: Soil blowing, erodes easily
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X011N

152—Argenta-Sonoma complex

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Argenta very fine sandy loam, 0 to 4 percent slopes—Aeric Halaquepts, coarse-loamy, mixed (calcareous), mesic—70 percent
• Sonoma silty clay loam, drained, strongly saline, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Sonoma silty clay loam, 0 to 2 percent slopes, frequently flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Argenta Soil

Position on landscape: Flood plain remnants
Parent material: Kind—alluvium; source—dominantly volcanic rock
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, inland saltgrass, alkali sacaton

Typical Profile

0 to 7 inches—very fine sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 25 mmhos/cm); strongly sodic (SAR 50 to 65); estimated Unified classification—ML; estimated AASHTO classification—A-4
7 to 45 inches—stratified fine sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 25 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4
45 to 60 inches or more—gravelly sandy loam; 35 to 45 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: February through July—32 to 40 inches; rest of year—below this depth
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 6.5 to 9.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Characteristics of the Sonoma Soil

Position on landscape: Recently entrenched part of flood plain remnants
Parent material: Kind—alluvium; source—dominantly volcanic rock
Slope features: Length—long; shape—smooth
Dominant present vegetation: Willow, basin big sagebrush, silver sagebrush, inland saltgrass, basin wildrye

Typical Profile

0 to 8 inches—silty clay loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 25 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7
8 to 60 inches or more—stratified silty clay loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: December through March—42 to 60 inches; rest of year—more than 60 inches
Frequency of flooding: Frequency—occasional; duration—brief; months—March through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth, irregularly shaped flood plains
Contrasting features: Receives additional soil moisture from flooding and the seasonal high water table
Distinctive present vegetation: Basin wildrye, creeping wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability of the Argenta soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—fair; shallow water areas—fair
Suitability of the Sonoma soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—good

Ratings and Restrictive Features of the Argenta Soil for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium
Drainage: Frost action
Irrigation: Soil blowing, erodes easily
Terraces and diversions: Erodes easily, soil blowing

Ratings and Restrictive Features of the Sonoma Soil for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt
Shallow excavations: Moderate—wetness, flooding

Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt
Drainage: Frost action
Irrigation: Erodes easily, flooding, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Argenta soil, VIw, irrigated, and VIIw, nonirrigated; Sonoma soil, IIIw, Irrigated, and VIIw, nonirrigated
Range site: Argenta soil—024X011N; Sonoma soil—024X007N

160—Batan fine sandy loam

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Batan fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—10 percent
• Inclusion 2: Misad gravelly fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Batan Soil

Position on landscape: Irregularly shaped alluvial flat remnants
Parent material: Kind—silty alluvium influenced by loess; source—volcanic rocks high in pyroclastic materials
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, bottlebrush squirreltail

Typical Profile

0 to 5 inches—fine sandy loam; platy structure; hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 40 mmhos/cm); moderately sodic (SAR 35 to 46); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
5 to 68 inches or more—stratified silt loam to silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.1 to 12.3 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth outer margin of alluvial flats remnants
Contrasting features: Coarser textured substratum
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 2
Position on landscape: Smooth inset fans and fan skirts adjacent to the upper margin of alluvial flats
Contrasting features: Very gravelly substratum
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland
Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium

Septic tank absorption field: Severe—percs slowly
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Soil blowing, excess salt, excess sodium
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

161—Batan silt loam

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Rosney silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Sonoma silt loam, strongly saline, 0 to 2 percent slopes, rarely flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Batan Soil

Position on landscape: Alluvial flat remnants
Parent material: Kind—silty alluvium influenced by loess; source—volcanic rock high in pyroclastics
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, littleleaf horsebrush, bud sagebrush, seepweed

Typical Profile

0 to 5 inches—silt loam; platy structure; hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 40 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 68 inches or more—stratified silt loam to silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.3 to 12.5 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth, slightly higher parts of alluvial flat remnants
Contrasting features: Loamy soil profile
Distinctive present vegetation: Black greasewood, shadscale, and bud sagebrush
Inclusion 2
Position on landscape: Smooth recent alluvial flats near channels
Contrasting features: More permeable soil profile
Distinctive present vegetation: Black greasewood, shadscale, and bud sagebrush
Inclusion 3
Position on landscape: Smooth flood plains adjacent to alluvial flats
Contrasting features: Seasonal high water table at a depth of about 40 inches
Distinctive present vegetation: Basin wildrye, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Erodes easily, excess salt, excess sodium
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

162—Batan silt loam, occasionally flooded

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Batan silt loam, 0 to 2 percent slopes, occasionally flooded—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Creemon silt loam, 0 to 2 percent slopes, occasionally flooded—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 2: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent
• Inclusion 3: Wholan very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—5 percent

Characteristics of the Batan Soil

Position on landscape: Alluvial flat remnants
Parent material: Kind—silty alluvium influenced by loess; source—volcanic rock high in pyroclastics
Slope features: Length—long; shape—smooth
Dominant present vegetation: Bud sagebrush, winterfat, bottlebrush squirreltail

Typical Profile

0 to 5 inches—silt loam; platy structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 40 inches—stratified silt loam to silty clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL; estimated AASHTO classification—A-6
40 to 60 inches or more—stratified silt loam to silty clay loam; massive; slightly hard, firm; strongly alkaline (pH 8.8); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 30); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Frequency—occasional; duration—very brief; months—February through June
Permeability: Moderately slow
Available water capacity: 11.3 to 12.5 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Outer margin of alluvial flat adjacent to inset fans
Contrasting features: Coarse textured soil profile
Distinctive present vegetation: Winterfat and bud sagebrush
Inclusion 2
Position on landscape: Fan skirts adjacent to alluvial flat remnants
Contrasting features: Rarely flooded

Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 3

Position on landscape: Adjacent smooth to slightly concave inset fans
Contrasting features: Coarser textured soil profile
Distinctive present vegetation: Winterfat and bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:

Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—low strength, flooding
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Moderate—excess salt
Drainage: Deep to water
Irrigation: Flooding, excess salt, excess sodium
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIw, irrigated, and VIIw, nonirrigated
Range site: 024X004N

163—Batan silt loam, slightly saline

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:

• Batan silt loam, slightly saline, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—85 percent

Contrasting inclusions:

• Inclusion 1: Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Raglan silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—5 percent
• Inclusion 3: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Batan Soil

Position on landscape: Alluvial flat remnants
Parent material: Kind—silty alluvium influenced by loess; source—volcanic rock high in pyroclastics
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, littleleaf horsebrush, bud sagebrush

Typical Profile

0 to 5 inches—silt loam; platy structure; slightly hard, friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR 2 to 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

5 to 68 inches or more—stratified silt loam to silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Smooth margins of alluvial flats
Contrasting features: Coarser textured soil profile
Distinctive present vegetation: Shadscale, black greasewood, bottlebrush, squirreltail

Inclusion 2
Position on landscape: Smooth fan skirts adjacent to alluvial flats
Contrasting features: Coarser textured soil profile
Distinctive present vegetation: Shadscale and bud sagebrush
Inclusion 3
Position on landscape: Smooth inset fans dissecting upper part of alluvial flats
Contrasting features: Nonsaline soil profile
Distinctive present vegetation: Shadscale and bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess sodium
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

164—Batan-Raglan-Rosney association

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,700 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—30 percent
• Raglan silt loam, strongly saline-sodic, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—30 percent
• Rosney silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Creemon very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—10 percent
• Inclusion 2: Teman silt loam, 0 to 2 percent slopes—Durixerollic Calciorthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Batan Soil

Position on landscape: Lower part of alluvial flat remnants
Parent material: Kind—silty alluvium influenced by loess; source—volcanic rock high in pyroclastics
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, bud sagebrush

Typical Profile

0 to 5 inches—silt loam; platy structure; hard, friable; strongly alkaline (pH 8.8); strongly saline (16 to 40 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 68 inches or more—stratified silt loam to silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L

Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Raglan Soil

Position on landscape: Foot slopes of fan skirts overplacing the upper part of alluvial flat remnants
Parent material: Loess influenced by volcanic ash with an admixture of mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, bud sagebrush

Typical Profile

0 to 6 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 30); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
6 to 14 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6
14 to 60 inches or more—stratified fine sandy loam to silty clay loam; 0 to 5 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 9.6 to 11.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Rosney Soil

Position on landscape: Upper part of alluvial flat remnants
Parent material: Loess mantled mixed silty alluvium influenced by volcanic ash
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Saltbush, Indian ricegrass

Typical Profile

0 to 7 inches—silt loam; platy structure; slightly hard, friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
7 to 25 inches—silt loam; massive; slightly hard, friable; strongly alkaline (pH 9.0); strongly saline (30 to 40 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
25 to 60 inches or more—stratified silt loam to silty clay; massive; slightly hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); moderately to strongly sodic (SAR 30 to 60); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 10.2 to 11.4 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.64; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan skirts adjacent to the upper part of alluvial flats
Contrasting features: Coarser textured substratum and a nonsaline-alkali surface layer
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Active inset fans and areas adjacent to channels on alluvial flat remnants
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Basin wildrye, Wyoming big sagebrush, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Batan soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Raglan soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Rosney soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Batan Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Raglan Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt

Ratings of the Rosney Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Batan soil—IIIs, irrigated, and VIIs, nonirrigated; Raglan soil—VIIs, nonirrigated; Rosney soil—VIIs, nonirrigated
Range site: Batan soil—024X003N; Raglan soil—024X003N; Rosney soil—024X012N

166—Batan-Wendane-Sonoma association

Map Unit Setting

Position on landscape: Basin floor
Elevation: 4,600 to 4,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—30 percent
• Wendane silty clay loam, 0 to 2 percent slopes, frequently flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—30 percent
• Sonoma silty clay loam, 0 to 2 percent slopes, frequently flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 0 to 2 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—8 percent
• Inclusion 2: Typic Torriorthents, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—7 percent

Characteristics of the Batan Soil

Position on landscape: Alluvial flat remnants
Parent material: Kind—silty alluvium influenced by loess; source—volcanic rock high in pyroclastics
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, basin wildrye, littleleaf horsebrush

Typical Profile

0 to 5 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 40 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 68 inches or more—stratified silt loam to silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46);

estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Wendane Soil

Position on landscape: Alluvial flats
Parent material: Mixed silty alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Black greasewood, rubber rabbitbrush, big saltbush, basin wildrye

Typical Profile

0 to 13 inches—silty clay loam; platy structure; slightly hard, very friable; very strongly alkaline (pH 9.6); strongly saline (30 to 50 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7
13 to 27 inches—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
27 to 60 inches or more—stratified silt loam to clay loam; massive; hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 25 mmhos/cm); slightly to moderately sodic (SAR 20 to 35); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through July—30 to 48 inches; rest of year—below 48 inches
Frequency of flooding: Frequency—frequent; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Characteristics of the Sonoma Soil

Position on landscape: Flood plains
Parent material: Silty mixed alluvium with some influence from volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, basin big sagebrush, basin wildrye

Typical Profile

0 to 8 inches—silty clay loam; subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
8 to 60 inches or more—stratified silty clay loam to silt loam; massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: In February through June—18 to 36 inches; rest of year—below 36 inches
Frequency of flooding: Frequency—frequent; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 11 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1

Position on landscape: Adjacent smooth fan skirts
Contrasting features: Moderately well drained soil with a fine sandy loam profile

Distinctive present vegetation: Black greasewood, basin big sagebrush, basin wildrye

Inclusion 2

Position on landscape: Smooth stream terraces
Contrasting features: Well drained
Distinctive present vegetation: Black greasewood, shadscale, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:

Suitability of the Batan soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Wendane soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair
Suitability of the Sonoma soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—good; shallow water areas—fair

Ratings of the Batan Soil for Selected Uses

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Wendane Soil for Selected Uses

Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—flooding, wetness
Local roads and streets: Severe—flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings of the Sonoma Soil for Selected Uses

Range seeding: Poor—excess salt
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness

Interpretive Groups

Capability classification: Batan soil—IIIs, irrigated, and VIIs, nonirrigated; Wendane soil—VIIw, nonirrigated; Sonoma soil—IIIw, irrigated, and VIw, nonirrigated
Range site: Batan soil—024X003N; Wendane soil—024X007N; Sonoma soil—025X001N

167—Batan-Wendane-Valmy association

Map Unit Setting

Position on landscape: Alluvial flats and fan skirts
Elevation: 4,700 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:

• Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—35 percent
• Wendane silt loam, drained, 0 to 2 percent slopes, occasionally flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—30 percent
• Valmy very fine sandy loam, silty substratum, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—20 percent

Contrasting inclusions:

• Inclusion 1: Durorthidic Torriorthents, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—10 percent
• Inclusion 2: Duric Camborthids, 0 to 2 percent slopes, occasionally flooded—Duric Camborthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Batan Soil

Position on landscape: Alluvial flat remnants
Parent material: Kind—silty alluvium influenced by loess; source—volcanic rock high in pyroclastics
Slope features: Length—long; shape—smooth to slightly concave
Dominant present vegetation: Shadscale, black greasewood

Typical Profile

0 to 5 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 40 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4

5 to 68 inches or more—stratified silt loam to silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Wendane Soil

Position on landscape: Alluvial flats
Parent material: Mixed silty alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Big saltbush, black greasewood, seepweed

Typical Profile

0 to 8 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 35 to 46); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4

8 to 60 inches or more—silty clay loam, silt loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 25 to 30); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Frequency—occasional; duration—brief; months—December through May
Permeability: Moderately slow
Available water capacity: 10.2 to 12.0 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Moderate

Characteristics of the Valmy Soil

Position on landscape: Lower part of fan skirts
Parent material: Thin loess mantle influenced by volcanic ash over mixed alluvium
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Basin big sagebrush, black greasewood, shadscale, spiny horsebrush

Typical Profile

0 to 6 inches—very fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4

6 to 46 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); massive; slightly hard, friable; very strongly alkaline (pH 9.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

46 to 60 inches or more—silty clay loam; massive; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 46 inches—moderately rapid; below this depth—moderately slow
Available water capacity: 8.6 to 10.4 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—4; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper part of fan skirts
Contrasting features: Well drained soil with a strongly saline-sodic profile
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 2
Position on landscape: Inset fans dissecting alluvial flat remnants
Contrasting features: Receives additional soil moisture from runoff and flooding
Distinctive present vegetation: Black greasewood, basin big sagebrush, rubber rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Batan soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Wendane soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Valmy soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Batan Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Wendane Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings of the Valmy Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Fair—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Batan soil—IIIs, irrigated, and VIIs, nonirrigated; Wendane soil—VIIs, nonirrigated; Valmy soil—IIc, irrigated, and VIIc, nonirrigated
Range site: Batan soil—024X003N; Wendane soil—024X015N; Valmy soil—024X022N

168—Batan-Bubus-Ocala association

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 5,000 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—35 percent
• Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—35 percent
• Ocala silt loam, 0 to 2 percent slopes, occasionally flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids, 0 to 2 percent slopes—Durixerollic Camborthids, fine-silty, mixed, mesic—5 percent
• Inclusion 2: Duric Camborthids, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Batan Soil

Position on landscape: Lower part of alluvial flat remnants shallowly dissected by stream channels
Parent material: Kind—silty alluvium influenced by loess; source—volcanic rock high in pyroclastics
Slope features: Length—long; shape—smooth

Dominant present vegetation: Shadscale, bud sagebrush, black greasewood, bottlebrush squirreltail

Typical Profile

0 to 5 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 25 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4

5 to 68 inches or more—stratified silt loam to silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Bubus Soil

Position on landscape: Upper part of alluvial flat remnants shallowly dissected by stream channels
Parent material: Mixed alluvium high in pyroclastics
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, black greasewood, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); strongly saline (16 to 25 mmhos/cm); slightly to moderately sodic (SAR 20 to 30); estimated Unified classification—ML; estimated AASHTO classification—A-4

6 to 60 inches or more—stratified sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Ocala Soil

Position on landscape: Alluvial flats
Parent material: Mixed alluvium influenced by volcanic ash
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Black greasewood, rubber rabbitbrush, inland saltgrass, basin wildrye

Typical Profile

0 to 13 inches—silt loam; platy structure; slightly hard, friable; very strongly alkaline (pH 9.2); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML, CL; estimated AASHTO classification—A-4, A-6

13 to 60 inches or more—silt loam, silty clay loam; massive; slightly hard and hard, friable and firm; strongly alkaline (pH 8.8); slightly saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 20 to 35); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: In February through May—42 to 60 inches; rest of year—below 60 inches
Frequency of flooding: Frequency—occasional; duration—long; months—March through May
Permeability: Slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Inset fans dissecting alluvial flat remnants
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Basin big sagebrush, black greasewood, basin wildrye
Inclusion 2
Position on landscape: Slightly concave fan skirt remnants adjacent to alluvial flats
Contrasting features: Noncalcareous surface layer
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Batan soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Bubus soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Ocala soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—fair

Ratings of the Batan Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Bubus Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings of the Ocala Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Batan soil—IIIs, irrigated, and VIIs, nonirrigated; Bubus soil—IIs, irrigated, and VIIs, nonirrigated; Ocala soil—VIIw, nonirrigated
Range site: Batan soil—024X003N; Bubus soil—024X003N; Ocala soil—024X007N

169—Batan-Ocala-Ocala, rarely flooded, association

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,500 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—35 percent
• Ocala silty clay loam, 0 to 2 percent slopes, occasionally flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—25 percent
• Ocala silty clay loam, 0 to 2 percent slopes, rarely flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Aquic Durorthidic Torriorthents, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Playas—5 percent
• Inclusion 3: Xeric Torriorthents, 8 to 15 percent

slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent

Characteristics of the Batan Soil

Position on landscape: Alluvial flat remnants
Parent material: Kind—silty alluvium influenced by loess; source—volcanic rock high in pyroclastics
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, black greasewood, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 40 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 68 inches or more—stratified silt loam to silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Ocala Soil

Position on landscape: Alluvial flats near shallow channels
Parent material: Silty alluvium influenced by volcanic ash
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye, inland saltgrass

Typical Profile

0 to 13 inches—silt clay loam; platy structure; slightly hard, friable; very strongly alkaline (pH 9.2); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML, CL; estimated AASHTO classification—A-7
13 to 60 inches or more—silt loam, silty clay loam; massive; slightly hard and hard, friable and firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 20 to 35); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through May—42 to 60 inches; rest of year—below 60 inches
Frequency of flooding: Frequency—occasional; duration—long; months—March through May
Permeability: Slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Characteristics of the Ocala, Rarely Flooded, Soil

Position on landscape: Slightly higher unchanneled alluvial flats
Parent material: Silty alluvium influenced by volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood

Typical Profile

0 to 6 inches—silty clay loam; platy structure; hard, friable; very strongly alkaline (pH 9.4); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML, CL; estimated AASHTO classification—A-7
6 to 13 inches—silt loam, silty clay loam; massive; hard, friable; very strongly alkaline (pH 9.2); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 35 to 46); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7
13 to 60 inches or more—silt loam, silty clay loam; 0 to 10 percent pebbles (by weight); massive; hard and slightly hard, firm and friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm);

moderately sodic (SAR 25 to 46); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through May—42 to 60 inches; rest of year—below 60 inches
Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Ponded
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, active inset fans dissecting alluvial flat remnants
Contrasting features: Slightly saline-sodic profile
Distinctive present vegetation: Basin big sagebrush, black greasewood
Inclusion 2
Position on landscape: Small, irregularly shaped depressions adjacent to the lower margin of alluvial flats
Contrasting features: Areas pond water for prolonged periods and have thick, hard vesicular crusts
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Convex stabilized dunes on alluvial flats
Contrasting features: Sandy loam soil profile
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Batan soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Ocala soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—fair
Suitability of the Ocala, rarely flooded, soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings of the Batan Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Ocala Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Ocala, Rarely Flooded, Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Batan soil—IIIs, irrigated, and VIIs, nonirrigated; Ocala soil—VIIw, nonirrigated; Ocala, rarely flooded, soil—VIIw, nonirrigated
Range site: Batan soil—024X003N; Ocala soil—024X007; Ocala, rarely flooded, soil—024X011N

170—Beoska silt loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Beoska silt loam, 0 to 2 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Blacka very fine sandy loam, 0 to 2 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Tenabo silt loam, 0 to 2 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—5 percent

Characteristics of the Beoska Soil

Position on landscape: Nonburied fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, pepperweed, Indian ricegrass, bottlebrush squirreltail, cheatgrass

Typical Profile

0 to 13 inches—silt loam; 15 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
24 to 55 inches—gravelly very fine sandy loam; 25 to 50 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
55 to 62 inches or more—very gravelly fine sandy loam; 50 to 75 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.9 to 9.8 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, slightly higher fan aprons on fan piedmont remnants
Contrasting features: A strongly cemented hardpan at a depth of less than 40 inches
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Smooth inset fans and fan skirts at lower edge of fan piedmont remnants
Contrasting features: Coarser textured subsoil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Smooth upper part of fan piedmont remnants
Contrasting features: Indurated hardpan at a depth of 10 to 20 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants

(nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Excess salt, excess sodium
Irrigation: Erodes easily, excess sodium
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X002N

171—Beoska silt loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Beoska silt loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Blacka very fine sandy loam, 2 to 8 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Broyles very fine sandy loam, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 3: Tenabo silt loam, 2 to 8 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—4 percent
• Inclusion 4: Orovada fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—2 percent

Characteristics of the Beoska Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, pepperweed, Indian ricegrass, bottlebrush squirreltail, cheatgrass

Typical Profile

0 to 13 inches—silt loam; 15 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; slightly hard, firm; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
55 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; slightly hard, firm; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.9 to 9.8 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight

Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex fan aprons on fan piedmont remnants
Contrasting features: Coarser subsoils and a strongly cemented hardpan within a depth of 40 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Smooth inset fans dissecting the lower fan piedmont and adjacent fan skirts
Contrasting features: Coarser textured subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Smooth, slightly dissected summits in the upper parts of fan piedmont remnants
Contrasting features: Indurated hardpan at a depth of 10 to 20 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 4
Position on landscape: Concave drainageways and inset fans dissecting the upper part of the fan piedmont
Contrasting features: Coarser subsoil; receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Erodes easily, excess sodium, slope
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIe, irrigated, and VIIs, nonirrigated
Range site: 024X002N

172—Beoska-Tenabo silt loams, nearly level

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Beoska silt loam, 0 to 2 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—60 percent
• Tenabo silt loam, 0 to 2 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—30 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids, 0 to 2 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Haplic Nadurargids, 0 to 2 percent slopes—Haplic Nadurargids, clayey, montmorillonitic, mesic, shallow—3 percent

Characteristics of the Beoska Soil

Position on landscape: Lower summits of fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, pepperweed, Indian ricegrass, bottlebrush squirreltail, cheatgrass

Typical Profile

0 to 13 inches—silt loam; 15 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

55 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.9 to 9.8 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Tenabo Soil

Position on landscape: Upper summits of fan piedmont remnants
Parent material: A thin loess mantle influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, pepperweed, cheatgrass

Typical Profile

0 to 13 inches—silt loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

13 to 20 inches—clay loam, gravelly clay loam, silty clay loam; 5 to 30 percent pebbles (by weight); prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (2 to 4 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

20 to 39 inches—indurated duripan; massive; very hard, very firm

39 to 60 inches or more—very gravelly loamy sand; 5 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 9 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.8 to 4.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan drainageways
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Position on landscape: Slightly dissected middle summits of fan piedmont remnants
Contrasting features: Strongly cemented duripan at a depth of 10 to 20 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability of the Beoska soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor
Suitability of the Tenabo soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features of the Beoska Soil for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Erodes easily, excess sodium
Terraces and diversions: Erodes easily

Ratings and Restrictive Features of the Tenabo Soil for Selected Uses and Practices
Range seeding: Poor—too arid, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—excess sodium, excess salt, seepage
Drainage: Deep to water
Irrigation: Cemented pan, erodes easily
Terraces and diversions: Cemented pan

Interpretive Groups
Capability classification: Beoska soil—IIIs, irrigated, and VIIs, nonirrigated; Tenabo soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Beoska soil—024X002N; Tenabo soil—024X002N

173—Beoska-Tenabo silt loams, sloping

Map Unit Setting
Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition
Major components:
• Beoska silt loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—60 percent
• Tenabo silt loam, 2 to 8 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—30 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids, 2 to 4 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Haplic Nadurargids, 2 to 8 percent slopes—Haplic Nadurargids, clayey, montmorillonitic, mesic, shallow—3 percent

Characteristics of the Beoska Soil
Position on landscape: Lower summits of fan piedmont remnants
Parent material: Loess over gravelly and loamy mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, pepperweed, Indian ricegrass, bottlebrush squirreltail, cheatgrass

Typical Profile

0 to 13 inches—silt loam; 15 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH

8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

55 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.9 to 9.8 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Tenabo Soil

Position on landscape: Upper summits of fan piedmont remnants
Parent material: Thin loess mantle influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, pepperweed, cheatgrass

Typical Profile

0 to 13 inches—silt loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

13 to 20 inches—clay loam, gravelly clay loam, silty clay loam; 5 to 30 percent pebbles (by weight); prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (2 to 4 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

20 to 39 inches—indurated duripan; massive; very hard, very firm

39 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sand; 5 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); single grained; loose; very strongly alkaline (pH 9.2); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 9 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.8 to 4.2 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan drainageways
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Position on landscape: Dissected middle summits of fan piedmont remnants
Contrasting features: Clayey subsoil and a strongly cemented duripan at a depth of 10 to 20 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability of the Beoska soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor
Suitability of the Tenabo soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—

poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features of the Beoska Soil for Selected Uses and Practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Slope, erodes easily, excess sodium
Terraces and diversions: Erodes easily

Ratings and Restrictive Features of the Tenabo Soil for Selected Uses and Practices

Range seeding: Poor—too arid, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—excess sodium, excess salt, seepage
Drainage: Deep to water
Irrigation: Slope, cemented pan, erodes easily
Terraces and diversions: Cemented pan

Interpretive Groups

Capability classification: Beoska soil—IIIe, irrigated, and VIIs, nonirrigated; Tenabo soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Beoska soil—024X002N; Tenabo soil—024X002N

174—Beoska-Chiara association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Beoska silt loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—55 percent
• Chiara fine sandy loam, 2 to 8 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—30 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Durargids, 2 to 8 percent slopes—Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow—7 percent
• Inclusion 2: Durixerollic Camborthids, 0 to 4 percent slopes—Durixerollic Camborthids, fine-loamy, mixed, mesic—4 percent
• Inclusion 3: Tenabo silt loam, 2 to 8 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—4 percent

Characteristics of the Beoska Soil

Position on landscape: Lower summits of fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Indian ricegrass

Typical Profile

0 to 13 inches—silt loam; 15 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
55 to 60 inches or more—stratified very gravelly sandy

loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.9 to 9.8 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Chiara Soil

Position on landscape: Shoulders and upper summits of fan piedmont remnants
Parent material: Loess mantle high in volcanic ash over mixed alluvium
Slope features: Length—short; shape—smooth to convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Typical Profile

0 to 5 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4
5 to 16 inches—very fine sandy loam, silt loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
16 inches—indurated duripan; massive; extremely hard, very firm

Soil and Water Features

Depth to hardpan: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.4 to 2.8 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan drainageways on upper fan piedmont remnants
Contrasting features: Very gravelly subsoil over indurated duripan and receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Inset fans
Contrasting features: Very deep soil, lacks a layer of clay accumulation, and receives additional soil moisture from runoff
Distinctive present vegetation: Basin big sagebrush
Inclusion 3
Position on landscape: Smooth to slightly convex stable areas on summits of upper part of fan piedmont remnants
Contrasting features: Loamy, sodium-affected subsoil over an indurated duripan at a depth less than 20 inches
Distinctive present vegetation: Shadscale and bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Chiara soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Beoska Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight

Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Chiara Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping, thin layer

Interpretive Groups

Capability classification: Beoska soil—IIIe, irrigated, and VIIs, nonirrigated; Chiara soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Beoska soil—024X002N; Chiara soil—024X005N

175—Beoska-Jenor association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Beoska silt loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—50 percent
• Jenor very fine sandy loam, 0 to 2 percent slopes—Typic Durorthids, coarse-loamy, mixed, mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Beoska silt loam, 2 to 4 percent slopes, occasionally flooded—Duric Natrargids, fine-loamy, mixed, mesic—7 percent
• Inclusion 2: Creemon very fine sandy loam, 2 to 4 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—4 percent
• Inclusion 3: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—4 percent

Characteristics of the Beoska Soil

Position on landscape: Shoulders and side slopes of fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Shadscale, bud sagebrush, pepperweed, bottlebrush squirreltail

Typical Profile

0 to 13 inches—silt loam; 15 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
55 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.9 to 9.8 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Jenor Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Loess over loamy mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, pepperweed

Typical Profile

0 to 6 inches—very fine sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR 2 to 10); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
6 to 16 inches—fine sandy loam; 0 to 5 percent cobbles and stones and 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.5); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—SM, SM-SC; estimated AASHTO classification—A-4
16 to 26 inches—fine sandy loam, sandy loam, gravelly loam; 0 to 5 percent cobbles and stones and 10 to 40 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM, SM-SC, ML, CL-ML; estimated AASHTO classification—A-4, A-2
26 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth foot slopes of fan piedmont remnants
Contrasting features: Receives additional soil moisture from runoff and shallow, low-velocity floods
Distinctive present vegetation: Winterfat, bud sagebrush, shadscale

Inclusion 2
Position on landscape: Smooth to slightly convex, lower inset fans
Contrasting features: Very deep soil with a silty subsoil
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 3
Position on landscape: Adjacent fan skirts
Contrasting features: Very deep soil with a silty subsoil
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Jenor soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Beoska Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Jenor Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Beoska soil—IIIe, irrigated, and

VIIs, nonirrigated; Jenor soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Beoska soil—024X002N; Jenor soil—024X002N

177—Beoska-Oxcorel-McConnel association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Beoska gravelly very fine sandy loam, 2 to 4 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—40 percent
• Oxcorel gravelly very fine sandy loam, 2 to 4 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—30 percent
• McConnel gravelly fine sandy loam, 2 to 4 percent slopes—Xerollic Camborthids, sandy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Typic Haplargids, 4 to 8 percent slopes—Typic Haplargids, fine, montmorillonitic, mesic—5 percent
• Inclusion 2: Typic Camborthids, 2 to 4 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Xerollic Camborthids, 0 to 2 percent slopes—Xerollic Camborthids, fine-loamy, mixed, mesic—5 percent

Characteristics of the Beoska Soil

Position on landscape: Lower summits of fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope features: Length—long; shape—slightly convex to smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 13 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-4
13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; slightly hard, firm; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
55 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.0 to 8.1 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Oxcorel Soil

Position on landscape: Upper summits of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth or slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less

than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4

5 to 20 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

20 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); nonsaline to slightly saline (less than 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 20 inches—very slow; below this depth—moderately rapid
Available water capacity: 4.8 to 6.7 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the McConnel Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium influenced by loess and volcanic ash over gravelly mixed alluvium
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Typical Profile

0 to 2 inches—gravelly fine sandy loam; 30 to 50 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-4

2 to 12 inches—loam, sandy loam, fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML, SM; estimated AASHTO classification—A4

12 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sand; 0 to 15 percent cobbles and stones and 65 to 90 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GP; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid in the upper 12 inches; below this depth—very rapid
Available water capacity: 2.9 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly dissected side slopes of fan piedmont remnants
Contrasting features: Clayey subsoil not affected by sodium, 4 to 8 percent slopes
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Irregularly shaped fan skirts adjacent to lower part of fan piedmont
Contrasting features: Sandy loam subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Concave inset fan remnants
Contrasting features: Heavy loam subsoil
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the McConnel soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Beoska Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones, excess sodium
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the McConnel Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—too sandy, area reclaim, small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Beoska soil—IIIe, irrigated, and VIIs, nonirrigated; Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated; McConnel soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Beoska soil—024X002N; Oxcorel soil—024X002N; McConnel soil—024X020N

178—Beoska-Malpais-Old Camp association

Map Unit Setting

Position on landscape: Hills and adjacent fan piedmonts
Elevation: 4,800 to 5,600 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Beoska very fine sandy loam, 4 to 8 percent slopes, extremely stony—Duric Natrargids, fine-loamy, mixed, mesic—35 percent
• Malpais loam, 30 to 50 percent slopes, rubbly—Typic Camborthids, loamy-skeletal, mixed, mesic—30 percent
• Old Camp very cobbly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids, 2 to 8 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 2: Rock outcrop—4 percent
• Inclusion 3: Puett sandy loam, 8 to 30 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—3 percent
• Inclusion 4: Rubble land—2 percent

Characteristics of the Beoska Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Loess over gravelly and loamy mixed alluvium
Slope features: Length—short; shape—slightly convex to slightly concave
Dominant present vegetation: Shadscale, bud sagebrush, spiny hopsage, small rabbitbrush, needleandthread

Typical Profile

0 to 13 inches—very fine sandy loam; 10 to 25 percent cobbles and stones and 10 to 20 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

55 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft; very friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.1 to 9.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Malpais Soil

Position on landscape: Dominantly south-facing toe slopes of hills
Parent material: Mixed colluvium
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, shadscale, pine bluegrass, bluebunch wheatgrass, cheatgrass
Rock fragments on surface: Kind—stones; percentage of surface covered—20

Typical Profile

0 to 3 inches—very gravelly loam; 10 to 20 percent cobbles and 50 to 65 percent pebbles (by weight); platy structure; soft, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2

3 to 15 inches—very gravelly loam, very cobbly fine sandy loam; 40 to 50 percent cobbles and stones or 65 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1

15 to 60 inches or more—stratified extremely cobbly loam to extremely cobbly sandy loam; 40 to 50 percent cobbles and stones or 50 to 65 percent pebbles (by weight); massive; loose; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.6 to 5.4 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Old Camp Soil

Position on landscape: North-facing side slopes, summits, and upper south-facing shoulder slopes of hills
Parent material: Kind—residuum and colluvium influenced by volcanic ash; source—andesite
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, small rabbitbrush

Typical Profile

0 to 2 inches—very cobbly loam; 25 to 55 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM, GM-GC, SM-SC; estimated AASHTO classification—A-4, A-2

2 to 14 inches—very stony loam, very cobbly clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave inset fans
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Scattered peaks on summits and shoulder slopes of hills
Contrasting features: Bedrock exposed at the surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Concave eroded side slopes of hills
Contrasting features: Soft bedrock at a depth of 10 to 20 inches
Distinctive present vegetation: Black sagebrush, bottlebrush squirreltail
Inclusion 4
Position on landscape: Side slopes of hills below Rock outcrop
Contrasting features: 100 percent stones and cobbles on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Malpais soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Beoska Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Malpais Soil for Selected Uses
Range seeding: Poor—large stones, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—large stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope, large stones
Local roads and streets: Severe—depth to bedrock, slope, large stones
Roadfill: Poor—depth to bedrock, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Beoska soil—VIIs, nonirrigated;

Malpais soil—VIIs, nonirrigated; Old Camp soil—VIIs, nonirrigated
Range site: Beoska soil—024X002N; Malpais soil—024X026N; Old Camp soil—024X005N

181—Beoska-Orovada association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,600 to 5,900 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Beoska gravelly sandy loam, 2 to 4 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—60 percent
• Orovada fine sandy loam, 2 to 8 percent slopes, rarely flooded—Durixerollic Camborthids, coarse-loamy, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Haplargids, 2 to 8 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Xerollic Camborthids, 2 to 4 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 3: Oxcorel very fine sandy loam, 0 to 4 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—4 percent

Characteristics of the Beoska Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope features: Length—long; shape—smooth to slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 13 inches—gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-1
13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
55 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 6.8 to 7.9 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Orovada Soil

Position on landscape: Inset fan remnants
Parent material: Loess high in volcanic ash over mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Sandberg bluegrass, phlox

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less

than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave side slopes of fan piedmont remnants
Contrasting features: Very gravelly subsoil and substratum
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Position on landscape: Inset fans
Contrasting features: Gravelly sandy loam throughout the soil profile, receives additional soil moisture from runoff and from occasional floods
Distinctive present vegetation: Wyoming big sagebrush, basin big sagebrush, Thurber needlegrass

Inclusion 3
Position on landscape: Slightly higher summits of fan piedmont remnants
Contrasting features: Clayey, sodium-affected subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and Restrictive Features of the Beoska Soil for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Excess salt, excess sodium, slope
Terraces and diversions: Erodes easily

Ratings and Restrictive Features of the Orovada Soil for Selected Uses and Practices
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action, flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing, slope, erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Beoska soil—IIIe, irrigated, and VIIs, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated
Range site: Beoska soil—024X002N; Orovada soil—024X020N

182—Beoska-Whirlo-Misad association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Beoska very fine sandy loam, 0 to 2 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—30 percent
• Whirlo silt loam, 0 to 2 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—30 percent
• Misad gravelly sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 0 to 2 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—8 percent
• Inclusion 2: Duric Natrargids, 0 to 2 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—7 percent

Characteristics of the Beoska Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Loess over gravelly mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 13 inches—very fine sandy loam; 5 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
55 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.5 to 9.4 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Inset fan remnants
Parent material: Mixed alluvium influenced by volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—silt loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.1); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
12 to 24 inches—very gravelly fine sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 15 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.9 to 6.1 inches
Water-supplying capacity: 7 inches

Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Misad Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium with some influence from loess high in volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—gravelly sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, SM-SC; estimated AASHTO classification—A-1, A-2

7 to 31 inches—stratified fine sandy loam to very gravelly sandy loam; 5 to 10 percent cobbles and stones and 40 to 60 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM, GM-GC, SM, SM-SC; estimated AASHTO classification—A-1, A-2

31 to 60 inches or more—very gravelly loamy sand to extremely gravelly coarse sand; 5 to 10 percent cobbles and stones and 60 to 80 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 31 inches—moderately rapid; below this depth—rapid
Available water capacity: 2.9 to 4.1 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—4
Hydrologic group: B
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent to stream channels
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, shadscale

Inclusion 2
Position on landscape: Upper summits of fan piedmont remnants
Contrasting features: Strongly cemented duripan at a depth of 40 to 60 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Misad soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Beoska Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Poor—small stones, seepage
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt

Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Misad Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—seepage, small stones, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Beoska soil—IIIs, irrigated, and VIIs, nonirrigated; Whirlo soil—IIc, irrigated, and VIIc, nonirrigated; Misad soil—IIIs, irrigated, and VIIs, nonirrigated
Range site: Beoska soil—024X002N; Whirlo soil—024X002N; Misad soil—024X002N

183—Beoska-Dewar-Orovada association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,400 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Beoska very fine sandy loam, 4 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—40 percent
• Dewar gravelly loam, 2 to 8 percent slopes—Xerollic Durargids, loamy, mixed, mesic, shallow—30 percent
• Orovada gravelly very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Haplargids, 15 to 50 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Xeric Torriorthents, 15 to 50 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—5 percent
• Inclusion 3: Duric Natrargids, 15 to 50 percent slopes—Duric Natrargids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Beoska Soil

Position on landscape: Summits and shoulders on the lower part of fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 13 inches—very fine sandy loam; 5 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
55 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.7 to 9.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate

Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Dewar Soil

Position on landscape: Summits on the upper parts of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 4 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC, CL; estimated AASHTO classification—A-6
4 to 14 inches—gravelly clay loam, gravelly silty clay loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC; estimated AASHTO classification—A-6, A-7
14 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 13 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.7 to 2.1 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Orovada Soil

Position on landscape: Inset fans
Parent material: Loess influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, spiny hopsage

Typical Profile

0 to 8 inches—gravelly very fine sandy loam; 25 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2, A-4
8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.2 to 9.4 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: North-facing side slopes of fan piedmont remnants
Contrasting features: Very deep soil with slopes of 15 to 50 percent
Distinctive present vegetation: Wyoming big sagebrush, Douglas rabbitbrush
Inclusion 2
Position on landscape: Slight concave side slopes of rock pediment remnants exposed by dissection of fan piedmonts
Contrasting features: Soft bedrock within a depth of 20 inches and slopes of 15 to 50 percent
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: South-facing side slopes of fan piedmont remnants

Contrasting features: Very deep soil with slopes of 15 to 50 percent
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Dewar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Beoska Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Dewar Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Beoska soil—IIIe, irrigated, and VIIs, nonirrigated; Dewar soil—IVe, irrigated, and VIIs, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated
Range site: Beoska soil—024X002N; Dewar soil—024X005N; Orovada soil—028B010N

185—Beowawe silt loam

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Beowawe silt loam, 0 to 2 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Beoska silt loam, 0 to 2 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—5 percent
• Inclusion 3: Tenabo silt loam, 0 to 2 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—5 percent

Characteristics of the Beowawe Soil

Position on landscape: Slightly dissected summits of fan piedmont remnants
Parent material: Loess capped mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile

0 to 6 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.3); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 11 inches—loam, silt loam; 0 to 5 percent pebbles (by weight); prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

11 to 60 inches or more—coarse sandy loam, loam; 5 to 15 percent pebbles (by weight); massive; hard, very friable; strongly alkaline (pH 8.9); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—SM, ML; estimated AASHTO classification—A-2, A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 8.5 to 10.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth inset fans
Contrasting features: Coarser textured subsoil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Smooth, undissected part of the fan piedmont
Contrasting features: Finer textured subsoil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Convex upper fan piedmont remnants
Contrasting features: Indurated duripan within a depth of 20 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess sodium
Drainage: Deep to water
Irrigation: Erodes easily, excess sodium
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIs, irrigated, and VIIs, nonirrigated
Range site: 024X002N

192—Vanwyper-Trunk-Trunk, steep, association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,400 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Vanwyper cobbly loam, 15 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—40 percent
• Trunk cobbly clay loam, 4 to 15 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—25 percent
• Trunk cobbly clay loam, 15 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—7 percent
• Inclusion 2: Aridic Haploxerolls, 4 to 8 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 3: Typic Camborthids, 2 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—3 percent

• Inclusion 4: Typic Durorthids, 8 to 15 percent slopes—Typic Durorthids, loamy, mixed, mesic, shallow—2 percent

Characteristics of the Vanwyper Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—tuffaceous and volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Basin wildrye, Wyoming big sagebrush
Surface cover: 10 percent pebbles, 10 percent cobbles

Typical Profile

0 to 7 inches—cobbly loam; 10 to 25 percent cobbles and stones and 15 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
7 to 22 inches—very cobbly clay, very cobbly clay loam; 30 to 55 percent cobbles and stones and 20 to 50 percent pebbles (by weight); prismatic structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL, CH; estimated AASHTO classification—A-7
22 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Trunk Soil

Position on landscape: Summits of mountains
Parent material: Kind—residuum and colluvium; source—sedimentary rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass

Typical Profile

0 to 5 inches—cobbly clay loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); granular structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
5 to 28 inches—gravelly clay loam, gravelly clay; 0 to 10 percent cobbles and stones and 20 to 50 percent pebbles (by weight); prismatic structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.0 to 3.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Trunk, Steep, Soil

Position on landscape: West-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—sedimentary rocks
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass

Typical Profile

0 to 5 inches—cobbly clay loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); granular structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
5 to 28 inches—gravelly clay loam, gravelly clay; 0 to 10 percent cobbles and stones and 20 to 50 percent pebbles (by weight); prismatic structure;

hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.0 to 3.9 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Small peaks and rimrock escarpments
Contrasting features: Bedrock exposed at the surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Upper drainageways
Contrasting features: Very deep soil that has a thick dark surface layer and receives additional soil moisture from runoff
Distinctive present vegetation: Mountain big sagebrush, antelope bitterbrush
Inclusion 3
Position on landscape: Lower drainageways and outwash fans
Contrasting features: Very deep soil with moderately salt- and sodium-affected substratum
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 4
Position on landscape: South-facing, isolated, convex toe slopes of mountains
Contrasting features: Duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Vanwyper soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Trunk, steep, soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Vanwyper Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, hard to pack, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—depth to bedrock, low strength, slope
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—large stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Trunk Soil for Selected Uses
Range seeding: Fair—droughty, too arid
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Trunk, Steep, Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—depth to bedrock, low strength, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Vanwyper soil—VIIs,

nonirrigated; Trunk soil —VIIs, nonirrigated; Trunk, steep, soil—VIIe, nonirrigated
Range site: Vanwyper soil—024X028N; Trunk soil—024X005N; Trunk, steep, soil—024X005N

193—Berning-Alley association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,000 to 5,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Berning extremely cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—45 percent
• Alley very gravelly loam, 15 to 30 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Malpais extremely gravelly loam, 30 to 50 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—8 percent
• Inclusion 2: Whirlo extremely gravelly sandy loam, 2 to 8 percent slopes, occasionally flooded—Typic Camborthids, loamy-skeletal, mixed, mesic—7 percent

Characteristics of the Berning Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Kind—alluvium; source—tuffaceous rocks
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass
Surface cover: 50 percent pebbles, 15 percent cobbles

Typical Profile

0 to 9 inches—extremely cobbly loam; 50 to 70 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2
9 to 40 inches—very gravelly clay loam, very gravelly clay, very gravelly sandy clay; 0 to 30 percent cobbles and stones and 60 to 75 percent pebbles (by weight); subangular blocky structure; hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
40 to 60 inches or more—very gravelly sandy loam, extremely gravelly sandy clay loam; 20 to 40 percent cobbles and stones and 60 to 80 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 3.2 to 4.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Alley Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass

Typical Profile

0 to 7 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 75 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2, A-4
7 to 26 inches—gravelly clay loam, gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); blocky structure; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6
26 to 37 inches—gravelly loam, gravelly sandy loam; 0 to 10 percent cobbles and stones and 40 to 50 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); nonsaline to slightly

saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC, SM, SM-SC; estimated AASHTO classification—A-2

37 to 60 inches or more—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 6.0 to 7.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Colluvial toe slopes of adjacent mountains
Contrasting features: Low water-supplying capacity
Distinctive present vegetation: Shadscale, Wyoming big sagebrush

Inclusion 2
Position on landscape: Inset fans
Contrasting features: Receives additional soil moisture from runoff and flooding, slope of 2 to 8 percent
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Berning soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Alley soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Berning Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Alley Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Berning soil—VIIs, nonirrigated; Alley soil—VIIs, nonirrigated
Range site: Berning soil—024X005N; Alley soil—024X005N

200—Sonoma Variant silt loam

Map Unit Setting

Position on landscape: Basin floor remnants
Elevation: 5,680 to 5,740 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Sonoma Variant silt loam, 0 to 2 percent slopes—Typic Fluvaquents, coarse-silty, mixed (calcareous), mesic—95 percent
Contrasting inclusions:
• Inclusion 1: Sonoma silt loam, strongly saline, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Sonoma Variant Soil

Position on landscape: Basin floor remnants
Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Alkali bluegrass, rush

Typical Profile

0 to 3 inches—silt loam; subangular blocky structure;

slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

3 to 60 inches or more—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.7); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to artesian water table: 6 to 18 inches throughout the year
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 10 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly higher areas on adjacent alluvial flats
Contrasting features: Lower fluctuating water table and a finer textured substratum
Distinctive present vegetation: Black greasewood, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—very poor; domestic grasses and legumes (irrigated)—very poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—good; shallow water areas—good

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—wetness, frost action
Roadfill: Poor—wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—wetness
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, wetness
Drainage: Frost action
Irrigation: Wetness, erodes easily, excess salt
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: Vw, irrigated, and Vw, nonirrigated
Range site: 024X043N

202—Bioya-Chiara-Cortez association

Map Unit Setting

Position on landscape: Fan piedmont remnants
Elevation: 5,000 to 5,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Bioya very fine sandy loam, 2 to 8 percent slopes—Xerollic Durorthids, fine-loamy, mixed, mesic—40 percent
• Chiara very fine sandy loam, 2 to 8 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—35 percent
• Cortez very fine sandy loam, 8 to 15 percent slopes—Xerollic Nadurargids, fine, montmorillonitic, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Natrargids, 4 to 8 percent slopes—Xerollic Natrargids, fine, montmorillonitic, mesic—5 percent
• Inclusion 2: Kelk silt loam, 0 to 2 percent slopes, occasionally flooded—Durixerollic Camborthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Bioya Soil

Position on landscape: Crests and side slopes of lower fan piedmont remnants
Parent material: Kind—loess capped alluvium; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Sandberg bluegrass

Typical Profile

0 to 11 inches—very fine sandy loam; 0 to 5 percent

pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4

11 to 38 inches—silt loam, loam; 0 to 5 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—CL, CL-ML; estimated AASHTO classification—A-6, A-4

38 to 60 inches or more—indurated duripan; massive; very hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Chiara Soil

Position on landscape: Shoulders and crests of higher fan piedmont remnants
Parent material: Loess mantle high in volcanic ash over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass, rabbitbrush, spiny hopsage

Typical Profile

0 to 5 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

5 to 16 inches—very fine sandy loam, silt loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

16 inches—indurated duripan; massive; extremely hard, very firm

Soil and Water Features

Depth to hardpan: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.5 to 2.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Cortez Soil

Position on landscape: Side slopes of upper fan piedmont remnants
Parent material: Thin deposits of loess over mixed alluvium
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass, rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—very fine sandy loam; 5 to 15 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

12 to 26 inches—clay, gravelly clay, silty clay; 15 to 40 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CH; estimated AASHTO classification—A-7

26 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 22 to 36 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.4 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—3

Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Toe slopes of fan piedmont remnants
Contrasting features: Very deep soil
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Inset fans
Contrasting features: Very deep soil that receives additional soil moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Bioya soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Chiara soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cortez soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Bioya Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan, frost action
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—cemented pan, thin layer
Pond reservoir areas: Moderate—slope, seepage, cemented pan
Embankments, dikes, and levees: Severe—piping

Ratings of the Chiara Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping, thin layer

Ratings of the Cortez Soil for Selected Uses
Range seeding: Poor—excess sodium
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, cemented pan, excess sodium
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer, hard to pack, excess sodium

Interpretive Groups

Capability classification: Bioya soil—IIIe, irrigated, and VIIs, nonirrigated; Chiara soil—IVe, irrigated, and VIIs, nonirrigated; Cortez soil—IVe, irrigated, and VIs, nonirrigated
Range site: Bioya soil—024X005N; Chiara soil—024X005N; Cortez soil—024X005N

203—Bioya-Shabliss-Puett association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,000 to 5,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Bioya very fine sandy loam, 2 to 8 percent slopes—Xerollic Durorthids, fine-loamy, mixed, mesic—55 percent
• Shabliss very fine sandy loam, 2 to 8 percent slopes—Haploxerollic Durorthids, loamy, mixed, mesic, shallow—15 percent
• Puett gravelly sandy loam, 15 to 30 percent slopes, very stony—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—15 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—5 percent
• Inclusion 2: Xeric Torriorthents, 0 to 8 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—4 percent
• Inclusion 3: Kelk silt loam, 0 to 2 percent slopes,

occasionally flooded—Durixerollic Camborthids, fine-silty, mixed, mesic—4 percent
• Inclusion 4: Shabliss stony loam, 8 to 15 percent slopes—Haploxerollic Durorthids, loamy, mixed, mesic, shallow—2 percent

Characteristics of the Bioya Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Kind—loess capped alluvium; source—volcanic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Thurber needlegrass, Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 11 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
11 to 38 inches—silt loam, loam; 0 to 5 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—CL, CL-ML; estimated AASHTO classification—A-6, A-4
38 to 60 inches or more—indurated duripan; massive; very hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Shabliss Soil

Position on landscape: Shoulders of fan piedmont remnants
Parent material: Loess capped mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Thurber needlegrass, Wyoming big sagebrush, bluebunch wheatgrass
Surface cover: 10 percent pebbles, 4 percent cobbles

Typical Profile

0 to 6 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 16 inches—very fine sandy loam, loam, silt loam; 0 to 5 percent cobbles and stones and 0 to 5 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
16 to 34 inches—strongly cemented duripan; platy structure; very hard, very firm
34 to 60 inches or more—loamy sand, gravelly loamy sand; 0 to 5 percent cobbles and stones and 20 to 40 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.7 to 3.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Puett Soil

Position on landscape: Side slopes of fan piedmont remnants with a core of soft rock
Parent material: Kind—residuum; source—tuffaceous rocks
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Indian ricegrass, Wyoming big sagebrush, black sagebrush

Surface cover: 25 percent pebbles, 10 percent cobbles, 2 percent stones

Typical Profile

0 to 4 inches—gravelly sandy loam; 5 to 10 percent cobbles and 25 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2

4 to 15 inches—coarse sandy loam, gravelly sandy loam, loam; 10 to 50 percent pebbles (by weight); massive; soft, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML, GM; estimated AASHTO classification—A-1, A-2, A-4

15 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1.7 to 2.1 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—4
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Exposed bedrock cores on eroded side slopes of fan piedmont remnants
Contrasting features: Bedrock exposed at the surface
Distinctive present vegetation: Barren

Inclusion 2
Position on landscape: Toe slopes of fan piedmont remnants
Contrasting features: Very deep
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Position on landscape: Inset fans
Contrasting features: Silty throughout the soil profile, occasionally flooded
Distinctive present vegetation: Basin wildrye, basin big sagebrush, black greasewood

Inclusion 4
Position on landscape: Upper side slopes of fan piedmont remnants
Contrasting features: Slopes of 8 to 15 percent and stony surface layer
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush, bluebunch wheatgrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Bioya soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Shabliss soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Puett soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Bioya Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan, frost action
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—cemented pan, thin layer
Pond reservoir areas: Moderate—slope, seepage, cemented pan
Embankments, dikes, and levees: Severe—piping

Ratings of the Shabliss Soil for Selected Uses
Range seeding: Fair—too arid, droughty, cemented pan
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Moderate—cemented pan, frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—piping

Ratings of the Puett Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope

Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—seepage, piping

Interpretive Groups

Capability classification: Bioya soil—IIIe, irrigated, and VIIs, nonirrigated; Shabliss soil—IVe, irrigated, and VIIs, nonirrigated; Puett soil—VIIe, nonirrigated
Range site: Bioya soil—024X005N; Shabliss soil—024X005N; Puett soil—025X025N

211—Blacka very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Blacka very fine sandy loam, 0 to 2 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 2: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—4 percent
• Inclusion 3: Orovada fine sandy loam, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 4: Jenor very fine sandy loam, 0 to 2 percent slopes—Typic Durorthids, coarse-loamy, mixed, mesic—3 percent

Characteristics of the Blacka Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, kochia, globemallow, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very fine sandy loam; prismatic structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 2 to 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 21 inches—fine sandy loam, very fine sandy loam; prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
21 to 31 inches—strongly cemented duripan; massive; very hard, very firm
31 to 60 inches or more—stratified sandy loam to loam; massive; slightly hard, very friable; moderately alkaline (pH 8.4); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to hardpan: 20 to 26 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower inset fans
Contrasting features: Very deep soils
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Smooth fan skirts bordering lower edge of fan piedmonts
Contrasting features: Very deep soil that has a silty subsoil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Smooth higher inset fans
Contrasting features: Very deep soils that receive additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 4
Position on landscape: Smooth upper part of fan piedmont remnants
Contrasting features: Indurated duripan
Distinctive present vegetation: Shadscale, bud sagebrush
Other inclusions of minor extent: Concave and smooth inset fans that receive additional soil moisture from runoff and occasional flooding, supporting winterfat and Indian ricegrass

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Moderate—cemented pan
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—cemented pan, thin layer
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Cemented pan, erodes easily
Terraces and diversions: Cemented pan, erodes easily

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 024X002N

212—Blacka-Broyles very fine sandy loams, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Intricately mingled fan piedmonts and fan skirts
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Blacka very fine sandy loam, 2 to 8 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—45 percent
• Broyles very fine sandy loam, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Jenor very fine sandy loam, 0 to 2 percent slopes—Typic Durorthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Orovada fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Soolake very fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, sandy, mixed, mesic—5 percent

Characteristics of the Blacka Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, kochia, globemallow, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very fine sandy loam; prismatic structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 2 to 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 21 inches—fine sandy loam, very fine sandy loam; prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
21 to 31 inches—strongly cemented duripan; massive; very hard, very firm
31 to 60 inches or more—stratified sandy loam to loam; massive; slightly hard, very friable; moderately alkaline (pH 8.4); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to hardpan: 20 to 26 inches
Depth to seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Broyles Soil

Position on landscape: Fan skirts
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, kochia, bottlebrush squirreltail

Typical Profile

0 to 11 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 2 to 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
11 to 60 inches or more—stratified loam to gravelly loamy sand; 5 to 40 percent pebbles (by weight); massive; hard, friable; very strongly alkaline (pH 9.2); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth upper summits of fan piedmont remnants
Contrasting features: Indurated duripan
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Smooth inset fans
Contrasting features: Very deep soil that receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Lower margins of fan skirts
Contrasting features: Sandy throughout the soil profile
Distinctive present vegetation: Black greasewood, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability of the Blacka soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor
Suitability of the Broyles soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)— very poor; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features of the Blacka Soil for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Moderate—cemented pan
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—cemented pan, thin layer
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Slope, cemented pan, erodes easily
Terraces and diversions: Cemented pan, erodes easily

Ratings and Restrictive Features of the Broyles Soil for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave

Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Excess salt, slope, erodes easily
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: Blacka soil—IVe, irrigated, and VIIs, nonirrigated; Broyles soils—IIIe, irrigated, and VIIc, nonirrigated
Range site: Blacka soil—024X002N; Broyles soil—024X002N

213—Blacka-Broyles very fine sandy loams, saline, 2 to 4 percent slopes

Map Unit Setting

Position on landscape: Intricately mingled fan piedmonts and fan skirts
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Blacka very fine sandy loam, strongly saline, 2 to 4 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—60 percent
• Broyles very fine sandy loam, strongly saline, 2 to 4 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Antel silt loam, 2 to 4 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent
• Inclusion 2: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—3 percent
• Inclusion 3: Wholan very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—2 percent

Characteristics of the Blacka Soil

Position on landscape: Nonburied fan piedmont remnants
Parent material: Loess capped mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, seepweed

Typical Profile

0 to 8 inches—very fine sandy loam; prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 21 inches—fine sandy loam, very fine sandy loam; prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
21 to 31 inches—strongly cemented duripan; massive; very hard, very firm
31 to 60 inches or more—stratified sandy loam to loam; massive; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to hardpan: 20 to 26 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Broyles Soil

Position on landscape: Fan skirts and inset fans intricately mingled with nonburied fan piedmont remnants
Parent material: Loess capped mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, seepweed

Typical Profile

0 to 5 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4

5 to 11 inches—silt loam, very fine sandy loam, fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

11 to 60 inches or more—stratified loam to gravelly loamy sand; 5 to 40 percent pebbles (by weight); massive; hard, friable; very strongly alkaline (pH 9.2); slightly saline to moderately saline (4 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Remnants of fan skirts
Contrasting features: Nonsaline or slightly saline surface layer and a finer textured substratum
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Remnants of inset fans
Contrasting features: Nonsaline or slightly saline surface layer
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Convex fan aprons overplacing fan piedmont remnants
Contrasting features: Soils are nonsaline throughout and receive shallow, low-velocity flooding in spring
Distinctive present vegetation: Winterfat, Indian ricegrass

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability of the Blacka soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor
Suitability of the Broyles soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features of the Blacka Soil for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Moderate—cemented pan
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Cemented pan, slope, erodes easily
Terraces and diversions: Cemented pan, erodes easily

Ratings and Restrictive Features of the Broyles Soil for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, slope
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: Blacka soil—VIs, irrigated, and VIIs, nonirrigated; Broyles soil—VIs, irrigated, and VIIs, nonirrigated

Range site: Blacka soil—024X003N; Broyles soil—024X003N

220—Blackhawk very fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,800 to 5,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Blackhawk very fine sandy loam, 2 to 8 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—85 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Xeric Torrifluvents, 2 to 8 percent slopes—Durorthidic Xeric Torrifluvents, sandy-skeletal, mixed, mesic—10 percent
• Inclusion 2: Broyles very fine sandy loam, moderately saline, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—3 percent
• Inclusion 3: Orovada fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—2 percent

Characteristics of the Blackhawk Soil

Position on landscape: Fan piedmont remnants
Parent material: Loamy mixed alluvium influenced by loess
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 14 inches—loam, very fine sandy loam, silt loam; 0 to 5 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 9.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
14 to 17 inches—strongly cemented duripan; massive; extremely hard, extremely firm
17 to 38 inches—stratified sandy loam to extremely gravelly loamy coarse sand; 10 to 30 percent pebbles (by weight); massive; slightly hard, friable; very strongly alkaline (pH 9.2); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2
38 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sand; 50 to 80 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.0); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—GP-GM, GP, SP-SM, SP; estimated AASHTO classification—A-1

Soil and Water Features

Range in depth to hardpan: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Above the hardpan—moderate; below the hardpan—very rapid
Available water capacity: 2.2 to 2.6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—1; wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth to slightly concave, upper inset fans and areas adjacent to channels
Contrasting features: Very deep soil that receives additional soil moisture from runoff and occasional flooding
Distinctive present vegetation: Basin big sagebrush
Inclusion 2
Position on landscape: Adjacent fan skirts
Contrasting features: Very deep soils
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 3
Position on landscape: Concave lower broad inset fans
Contrasting features: Very deep soil that receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Blackhawk Soil for Selected Uses
Range seeding: Poor—too arid, droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Moderate—cemented pan
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, area reclaim
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess salt

Interpretive Groups

Capability classification: IVe, irrigated, and VIIs, nonirrigated
Range site: 024X002N

230—Broyles very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—4 percent
• Inclusion 2: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—3 percent
• Inclusion 3: Weso fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—3 percent
• Inclusion 4: Blacka very fine sandy loam, 0 to 2 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Broyles Soil

Position on landscape: Fan skirts
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, kochia, bottlebrush squirreltail

Typical Profile

0 to 11 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
11 to 60 inches or more—stratified loam to gravelly loamy sand; 5 to 40 percent pebbles (by weight); massive; hard, friable; very strongly alkaline (pH 9.2); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth lower part of adjacent alluvial flats near flood-plain playas
Contrasting features: Calcareous throughout and moderately well drained
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 2
Position on landscape: Adjacent inset fans
Contrasting features: Silty throughout
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Smooth lower margin of fan skirts adjacent to alluvial flats
Contrasting features: A continuous weakly cemented subhorizon in the upper 40 inches

Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 4

Position on landscape: Smooth adjacent fan piedmont remnants

Contrasting features: A strongly cemented duripan at a depth of 20 to 26 inches

Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:

Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—too arid, excess salt, excess sodium

Septic tank absorption fields: Slight

Daily cover for landfill: Fair—too sandy, small stones

Shallow excavations: Severe—cutbanks cave

Local roads and streets: Slight

Roadfill: Good

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Poor—small stones

Pond reservoir areas: Severe—seepage

Embankments, dikes, and levees: Severe—piping

Drainage: Deep to water

Irrigation: Excess salt

Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: IIs, irrigated, and VIIc, nonirrigated

Range site: 024X002N

231—Broyles very fine sandy loam, 2 to 4 percent slopes

Map Unit Setting

Position on landscape: Fan skirts

Elevation: 4,400 to 5,600 feet

Average annual precipitation: About 7 inches

Average annual air temperature: About 49 degrees F

Frost-free season: About 110 days

Composition

Major components:

• Broyles very fine sandy loam, 2 to 4 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—85 percent

Contrasting inclusions:

• Inclusion 1: Blacka very fine sandy loam, 2 to 4 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—5 percent

• Inclusion 2: Creemon silt loam, 2 to 4 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent

• Inclusion 3: Orovada fine sandy loam, 2 to 4 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Broyles Soil

Position on landscape: Margins of fan skirts

Parent material: Loess over loamy mixed alluvium

Slope features: Length—long; shape—gently undulating

Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 11 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 2 to 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

11 to 60 inches or more—stratified loam to gravelly loamy sand; 5 to 40 percent pebbles (by weight); massive; hard, friable; very strongly alkaline (pH 9.2); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches

Frequency of flooding: None

Permeability: Moderately rapid

Available water capacity: 6.3 to 7.5 inches

Water-supplying capacity: 7 inches

Runoff: Slow

Hydrologic group: B

Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth upper fan skirt remnants
Contrasting features: A duripan at a depth of 20 to 26 inches
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Undulating fan skirts adjacent to alluvial flats near old channels
Contrasting features: Silty throughout
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Adjacent concave inset fans
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, Indian ricegrass

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Excess salt, erodes easily
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: IIe, irrigated, and VIIc, nonirrigated
Range site: 024X002N

232—Broyles very fine sandy loam, cemented substratum, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Broyles very fine sandy loam, cemented substratum, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Blacka very fine sandy loam, 0 to 2 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Jenor very fine sandy loam, 0 to 2 percent slopes—Typic Durorthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Broyles Soil

Position on landscape: Fan skirts
Parent material: Loess capped mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, spiny hopsage, horsebrush

Typical Profile

0 to 11 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
11 to 28 inches—sandy loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR 5 to 10); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
28 to 45 inches—stratified loamy sand to loamy fine sand; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-2
45 to 60 inches or more—strongly cemented duripan; massive; very hard, very firm

Soil and Water Features

Depth to hardpan: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.7 to 5.9 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower margins of fan skirts
Contrasting features: Strongly saline surface layer and a finer textured substratum
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 2
Position on landscape: Adjacent nonburied fan piedmont remnants
Contrasting features: A duripan at a depth of 20 to 26 inches
Distinctive present vegetation: Shadscale, bud sagebrush, Indian ricegrass
Inclusion 3
Position on landscape: Adjacent nonburied fan piedmont remnants
Contrasting features: Indurated duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Fair—cemented pan, thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Fair—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIs, irrigated, and VIIc, nonirrigated
Range site: 024X002N

233—Broyles very fine sandy loam, moderately saline, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Broyles very fine sandy loam, moderately saline, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Creemon silt loam, strongly saline, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 3: Raglan silty clay loam, moderately saline, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—5 percent

Characteristics of the Broyles Soil

Position on landscape: Fan skirts
Parent material: Loess over loamy mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, bud sagebrush, seepweed

Typical Profile

0 to 5 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13

to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 11 inches—silt loam, very fine sandy loam, fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
11 to 60 inches or more—stratified loam to gravelly loamy sand; 5 to 40 percent pebbles (by weight); massive; slightly hard, very friable; very strongly alkaline (pH 9.2); slightly saline to moderately saline (4 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent undulating recent alluvial flat remnants near channels
Contrasting features: Calcareous surface layer
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 2
Position on landscape: Adjacent smooth inset fans
Contrasting features: Silty throughout
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 3
Position on landscape: Margins of fan skirts adjacent to smooth alluvial flats
Contrasting features: Finer textured substratum
Distinctive present vegetation: Black greasewood, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Septic tank absorption fields: Slight
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Excess salt, erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

235—Broyles-Creemon association

Map Unit Setting

Position on landscape: Fan skirts and inset fans
Elevation: 5,000 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Broyles silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—45 percent
• Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Torriorthents, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—7 percent
• Inclusion 2: Duric Natrargids, 0 to 2 percent slopes—

Duric Natrargids, fine-loamy, mixed, mesic—6 percent
• Inclusion 3: Xerollic Camborthids, 0 to 2 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—2 percent

Characteristics of the Broyles Soil

Position on landscape: Upper part of fan skirts
Parent material: Loess over loamy mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 11 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

11 to 60 inches or more—stratified loam to gravelly loamy sand; 5 to 40 percent pebbles (by weight); massive; hard, friable; very strongly alkaline (pH 9.2); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Creemon Soil

Position on landscape: Lower part of fan skirts and inset fans
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—silt loam; platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4

7 to 18 inches—silt loam, very fine sandy loam; subangular blocky structure; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

18 to 60 inches or more—stratified very fine sandy loam to silt loam; massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10.1 to 12.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent to stream channels on lower margins of fan skirts
Contrasting features: Strongly salt- and sodium-affected surface layer
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 2
Position on landscape: Summits of adjacent fan piedmont remnants
Contrasting features: Clay loam subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Adjacent to stream channels on inset fans
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Broyles soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Creemon soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Broyles Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Creemon Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt

Interpretive Groups

Capability classification: Broyles soil—IIs, irrigated, and VIIe, nonirrigated; Creemon soil—IIc, irrigated, and VIIc, nonirrigated
Range site: Broyles soil—024X002N; Creemon soil—024X002N

237—Broyles-Beoska-Orovada association

Map Unit Setting

Position on landscape: Piedmont slope
Elevation: 5,000 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Broyles very fine sandy loam, 2 to 4 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—40 percent
• Beoska very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—30 percent
• Orovada fine sandy loam, 2 to 8 percent slopes, rarely flooded—Durixerollic Camborthids, coarse-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids, 2 to 8 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Typic Nadurargids, 2 to 8 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—5 percent

Characteristics of the Broyles Soil

Position on landscape: Fan skirts
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 11 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 2 to 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
11 to 60 inches or more—stratified loam to gravelly loamy sand; 5 to 40 percent pebbles (by weight); massive; hard, friable; very strongly alkaline (pH 9.2); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Beoska Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess capped mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 13 inches—very fine sandy loam; 5 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

55 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 9.0); moderately saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.7 to 9.6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Orovada Soil

Position on landscape: Inset fans
Parent material: Loess influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—concave to smooth
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4

8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1

Position on landscape: Adjacent to concave, irregularly shaped, active channels
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Inclusion 2
Position on landscape: Convex, slightly higher summits of fan piedmont remnants
Contrasting features: An indurated duripan at a depth of less than 20 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Broyles soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Broyles Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Beoska Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action, flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Broyles soil—IIe, irrigated, and VIIc, nonirrigated; Beoska soil—IIIe, irrigated, and VIIs, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated
Range site: Broyles soil—024X002N; Beoska soil—024X002N; Orovada soil—024X020N

240—Bubus very fine sandy loam

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—8 percent
• Inclusion 2: Rosney silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 3: Playas—3 percent

Characteristics of the Bubus Soil

Position on landscape: Alluvial flat remnants
Parent material: Mixed alluvium high in pyroclastics
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 60 inches or more—stratified sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately

sodic (SAR 40 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth outer margins of alluvial flat remnants
Contrasting features: Finer textured throughout
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 2
Position on landscape: Adjacent to channels on smooth alluvial flat remnants
Contrasting features: Finer textured throughout
Distinctive present vegetation: Saltbush, Indian ricegrass
Inclusion 3
Position on landscape: Low, smooth, irregularly shaped depressions and basins on alluvial flats
Contrasting features: Ponded
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland
Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

242—Bubus very fine sandy loam, gravelly substratum

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Bubus very fine sandy loam, gravelly substratum, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Misad gravelly sandy loam, saline-sodic, 0 to 2 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 3: Playas—5 percent

Characteristics of the Bubus Soil

Position on landscape: Alluvial flat remnants
Parent material: Loamy mixed alluvium high in pyroclastics over gravelly mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, bud sagebrush

Typical Profile

0 to 6 inches—very fine sandy loam; 0 to 10 percent

pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

6 to 40 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

40 to 60 inches or more—stratified very gravelly sand to extremely gravelly loamy coarse sand; 60 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.4); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—GP-GM, SP-SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 40 inches—moderate; below this depth—very rapid
Available water capacity: 6.6 to 7.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—4; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flat remnants
Contrasting features: Finer textured substratum
Distinctive present vegetation: Black greasewood, shadscale

Inclusion 2
Position on landscape: Adjacent to channels and narrow inset fans dissecting alluvial flats
Contrasting features: Very gravelly throughout the soil profile
Distinctive present vegetation: Black greasewood, shadscale

Inclusion 3
Position on landscape: Scattered, irregularly shaped sink areas
Contrasting features: Ponded water for long periods
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland
Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Septic tank absorption fields: Moderate—percs slowly
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—low strength
Roadfill: Fair—low strength
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Excess sodium, excess salt, erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

243—Bubus-Playas complex

Map Unit Setting

Position on landscape: Basin floors
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—55 percent
• Playas—30 percent
Contrasting inclusions:
• Inclusion 1: Batan silt loam, 0 to 2 percent slopes—

Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—10 percent
• Inclusion 2: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Bubus Soil

Position on landscape: Alluvial flat remnants
Parent material: Mixed alluvium high in pyroclastics
Slope features: Length—long; shape—smooth to undulating
Dominant present vegetation: Black greasewood, shadscale

Typical Profile

0 to 6 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 60 inches or more—stratified sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Playas

Position on landscape: Small basins and depressions
Parent material: Lacustrine deposits overplaced in some places by a thin layer of alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flat remnants adjacent to playas
Contrasting features: Finer textured substratum
Distinctive present vegetation: Black greasewood, shadscale

Inclusion 2
Position on landscape: Adjacent fan skirt remnants
Contrasting features: Nonsaline in the upper 20 or 30 inches
Distinctive present vegetation: Saltbush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland
Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability of the Bubus soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features of the Bubus Soil for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Septic tank absorption field: Moderate—percs slowly
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Bubus soil—IIs, irrigated, and VIIs, nonirrigated; Playas—VIIIw
Range site: Bubus soil—024X003N

244—Bubus-Relley complex

Map Unit Setting

Position on landscape: Fan skirts and alluvial flats
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Bubus gravelly loam, slightly saline, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—50 percent
• Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Hessing silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Wholan silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—5 percent

Characteristics of the Bubus Soil

Position on landscape: Alluvial flat remnants
Parent material: Mixed alluvium high in pyroclastics
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 6 inches—gravelly loam; 25 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM; estimated AASHTO classification—A-4
6 to 60 inches or more—stratified sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.9 to 10.1 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Relley Soil

Position on landscape: Fan skirts
Parent material: Kind—silty alluvium influenced by loess and volcanic ash; source—volcanic rock
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 8 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
8 to 16 inches—silt loam; 0 to 5 percent pebbles (by weight); prismatic structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
16 to 28 inches—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
28 to 60 inches or more—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 20 to 30); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10.8 to 12.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Fan skirt remnants
Contrasting features: Gravelly substratum
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Smooth inset fans dissecting alluvial flat remnants
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Winterfat

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability of the Bubus soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor
Suitability of the Relley soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—fair

Ratings and Restrictive Features of the Bubus Soil for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Ratings and Restrictive Features of the Relley Soil for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Bubus soil—IIs, irrigated, and VIIs, nonirrigated; Relley soil—IIc, irrigated, and VIIc, nonirrigated
Range site: Bubus soil—024X002N; Relley soil—024X002N

245—Bubus-Needle Peak-Yipor association

Map Unit Setting

Position on landscape: Inset fans and alluvial flats
Elevation: 4,600 to 4,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—40 percent
• Needle Peak silt loam, 0 to 2 percent slopes, occasionally flooded—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—25 percent
• Yipor very fine sandy loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Torriorthents, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—10 percent
• Inclusion 2: Typic Torriorthents, 0 to 4 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent

Characteristics of the Bubus Soil

Position on landscape: Slightly rilled alluvial flat remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, seepweed

Typical Profile

0 to 6 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); strongly saline (16 to 25 mmhos/cm); slightly sodic (SAR 13

to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 60 inches or more—stratified sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Needle Peak Soil

Position on landscape: Inset fans
Parent material: Silty mixed alluvium with some influence from loess and volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, basin big sagebrush, rubber rabbitbrush, basin wildrye

Typical Profile

0 to 9 inches—silt loam; platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7
9 to 49 inches—silt loam; subangular blocky structure; hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7
49 to 60 inches or more—sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: In January through May—48 to 72 inches; rest of year—below 72 inches
Frequency of flooding: Frequency—occasional; duration—brief; months—March through June
Permeability: Moderately slow
Available water capacity: 10.9 to 12.1 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Characteristics of the Yipor Soil

Position on landscape: Inset fan remnants
Parent material: Silty mixed alluvium with a component of loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, basin wildrye, sickle saltbush

Typical Profile

0 to 16 inches—very fine sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
16 to 60 inches or more—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 9.3 to 11.1 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Smooth fan skirts
Contrasting features: Rarely flooded, well drained soils

Distinctive present vegetation: Shadscale, black greasewood

Inclusion 2

Position on landscape: Dunes superimposed on alluvial flats
Contrasting features: Severe wind erosion hazard
Distinctive present vegetation: Shadscale, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:

Suitability of the Bubus soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Needle Peak soil for named elements: *Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair*
Suitability of the Yipor soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Bubus Soil for Selected Uses

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings of the Needle Peak Soil for Selected Uses

Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Fair—too clayey
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, frost action, flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Slight
Embankments, dikes, and levees: Moderate—thin layer, piping

Ratings of the Yipor Soil for Selected Uses

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt

Interpretive Groups

Capability classification: Bubus soil—VIs, irrigated, and VIIs, nonirrigated; Needle Peak soil—IIw, irrigated, and VIw, nonirrigated; Yipor soil—IIc, irrigated, and VIIc, nonirrigated
Range site: Bubus soil—024X003N; Needle Peak soil—024X006N; Yipor soil—024X012N

247—Bubus-Isolde association

Map Unit Setting

Position on landscape: Lake plains
Elevation: 4,600 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 115 days

Composition

Major components:

• Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—65 percent
• Isolde fine sand, 4 to 30 percent slopes—Typic Torripsamments, mixed, mesic—20 percent

Contrasting inclusions:

• Inclusion 1: Entic Durorthids, 0 to 2 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—5 percent
• Inclusion 2: Aquic Durorthidic Torriorthents, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Bubus Soil

Position on landscape: Interdune areas of lake plain terraces
Parent material: Loess over mixed alluvium high in pyroclastics
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, seepweed, spiny horsebrush

Typical Profile

0 to 6 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

6 to 60 inches or more—stratified sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Isolde Soil

Position on landscape: Partially stabilized sand dunes on lake plain terraces
Parent material: Kind—eolian sands; source—various kinds of rock
Slope features: Length—short; shape—undulating
Dominant present vegetation: Spiny hopsage, black greasewood, bud sagebrush, shadscale, Indian ricegrass

Typical Profile

0 to 7 inches—fine sand; single grained; loose; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SP, SP-SM; estimated AASHTO classification—A-3

7 to 60 inches or more—fine sand, sand; single grained; loose; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SP, SP-SM; estimated AASHTO classification—A-3

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very rapid
Available water capacity: 3.6 to 5.4 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—1
Hazard of erosion: By water—moderate; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent nonburied fan skirt remnants
Contrasting features: Strongly cemented duripan within a depth of 20 inches
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 2
Position on landscape: Higher part of lake plain near springs
Contrasting features: Poorly drained soils, silty throughout soil profile
Distinctive present vegetation: Black greasewood, seepweed

Inclusion 3
Position on landscape: Lowest portion of lake plains
Contrasting features: Somewhat poorly drained, silty throughout soil profile
Distinctive present vegetation: Black greasewood, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Bubus soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Isolde soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Bubus Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt

Ratings of the Isolde Soil for Selected Uses

Range seeding: Too arid, too sandy, soil blowing
Daily cover for landfill: Poor—seepage, too sandy, slopes
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Fair—slope
Sand: Probable source
Gravel: Improbable source—too sandy
Topsoil: Poor—too sandy, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, piping

Interpretive Groups

Capability classification: Bubus soil—IIs, irrigated, and VIIs, nonirrigated; Isolde soil—VIIs, nonirrigated
Range site: Bubus soil—024X003N; Isolde soil—027X016N

248—Bubus-Batan-Reese association

Map Unit Setting

Position on landscape: Basin floor
Elevation: 4,500 to 4,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—45 percent
• Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—25 percent
• Reese silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Aquic Durorthidic Torriorthents, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-loamy, mixed (calcareous), mesic—8 percent
• Inclusion 2: Aquic Torriorthents, 0 to 2 percent slopes—Aquic Torriorthents, fine-loamy, mixed (calcareous), mesic—2 percent

Characteristics of the Bubus Soil

Position on landscape: Alluvial flats remnants
Parent material: Mixed alluvium high in pyroclastics
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, seepweed, black greasewood, littleleaf horsebrush

Typical Profile

0 to 6 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 25 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 60 inches or more—stratified sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 42); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Batan Soil

Position on landscape: Stream terraces
Parent material: Kind—loess influenced silty alluvium; source—volcanic rock high in pyroclastics
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, littleleaf horsebrush, seepweed, bottlebrush squirreltail

Typical Profile

0 to 5 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 25 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 68 inches or more—stratified silt loam to silty clay

loam; massive; hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Reese Soil

Position on landscape: Irregularly shaped flood plains
Parent material: Kind—loamy alluvium; source—volcanic rock
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, seepweed, shadscale

Typical Profile

0 to 9 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
9 to 60 inches or more—stratified silt loam to silty clay loam; massive; hard, friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: In March through July—18 to 36 inches; rest of year—below 36 inches
Frequency of flooding: Frequency—occasional; duration—brief or long; months—April through May
Permeability: Slow
Available water capacity: 9.2 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Backfilled flood plain channels
Contrasting features: Somewhat poorly drained and moderately salt and sodium affected throughout the soil profile
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 2
Position on landscape: Adjacent to irregularly shaped flood plain channels
Contrasting features: Frequently flooded
Distinctive present vegetation: Basin big sagebrush, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Bubus soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Batan soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Reese soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings of the Bubus Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt

Ratings of the Batan Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good

Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Reese Soil for Selected Uses

Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Fair—low strength, shrink-swell, wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess sodium, excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness, excess sodium, excess salt

Interpretive Groups

Capability classification: Bubus soil—IIs, irrigated, and VIIs, nonirrigated; Batan soil—IIIs, irrigated, and VIIs, nonirrigated; Reese soil—VIIw, nonirrigated
Range site: Bubus soil—024X003N; Batan soil—024X003N; Reese soil—024X011N

251—Bucan-Bucan, steep, association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,200 to 5,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Bucan cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—60 percent
• Bucan very cobbly loam, 15 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Humdun silt loam, 30 to 50 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, frigid—10 percent
• Inclusion 2: Rock outcrop—5 percent

Characteristics of the Bucan Soil

Position on landscape: Lower side slopes of mountains
Parent material: Kind—residuum and colluvium capped with loess high in volcanic ash; source—volcanic rock
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluebunch wheatgrass, Thurber needlegrass
Surface cover: 15 percent pebbles

Typical Profile

0 to 5 inches—cobbly loam; 20 to 25 percent cobbles and stones and 20 to 30 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
5 to 23 inches—clay; 0 to 10 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH; estimated AASHTO classification—A-7
23 to 42 inches—cobbly clay, gravelly clay loam, gravelly clay; 10 to 30 percent cobbles and stones and 15 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-7
42 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 7.2 to 8.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—3; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Bucan, Steep, Soil

Position on landscape: Upper side slopes of mountains
Parent material: Kind—residuum and colluvium capped with loess high in volcanic ash; source—volcanic rock
Slope features: Length—long; shape—convex

Dominant present vegetation: Wyoming big sagebrush, rabbitbrush, bluebunch wheatgrass, Thurber needlegrass

Typical Profile

0 to 5 inches—very cobbly loam; 25 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC; estimated AASHTO classification—A-6

5 to 30 inches—clay; 0 to 10 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH; estimated AASHTO classification—A-7

30 to 52 inches—cobbly clay, gravelly clay loam, gravelly clay; 10 to 30 percent cobbles and stones and 15 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-7

52 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 7.2 to 8.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—3; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: North-facing, concave side slopes of mountains
Contrasting features: Lacks a layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush, bluebunch wheatgrass

Inclusion 2
Position on landscape: Scattered peaks on mountains
Contrasting features: Bedrock exposed at the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Bucan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bucan, steep, soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Bucan Soil for Selected Uses
Range seeding: Fair—too arid, large stones
Daily cover for landfill: Poor—large stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Ratings of the Bucan, Steep, Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—large stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—low strength, shrink-swell, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Interpretive Groups

Capability classification: Bucan soil—VIIs, nonirrigated; Bucan, steep, soil—VIIs, nonirrigated
Range site: Bucan soil—024X005N; Bucan, steep, soil—024X028N

252—Bucan-Humdun-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,000 to 5,800 feet

Average annual precipitation: About 10 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Bucan cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—50 percent
• Humdun silt loam, 15 to 30 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, frigid—20 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids, 2 to 8 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, frigid—5 percent
• Inclusion 2: Aridic Haploxerolls, 2 to 8 percent slopes—Aridic Haploxerolls, coarse-loamy, mixed, frigid—5 percent

Characteristics of the Bucan Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum and colluvium capped with loess high in volcanic ash; source—volcanic rock
Slope features: Length—long to short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, basin wildrye, bottlebrush squirreltail

Typical Profile

0 to 5 inches—cobbly loam; 20 to 25 percent cobbles and stones and 20 to 30 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
5 to 15 inches—clay; 0 to 10 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH; estimated AASHTO classification—A-7
15 to 42 inches—cobbly clay, gravelly clay loam, gravelly clay; 10 to 30 percent cobbles and stones and 15 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-7
42 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 7.2 to 8.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—3; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Humdun Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—loess high in volcanic ash over colluvium and residuum; source—mostly extrusive volcanic rock
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, basin wildrye, bottlebrush squirreltail

Typical Profile

0 to 6 inches—silt loam; platy structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 24 inches—loam, very fine sandy loam, silt loam; subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
24 to 60 inches or more—loam, very fine sandy loam, silt loam; massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10.3 to 12.1 inches
Water-supplying capacity: 8 inches
Runoff: Rapid

Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Rimrock and scattered peaks on mountains
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Crests of mountains
Contrasting features: Bedrock within a depth of 20 inches
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Foot slopes adjacent to mountain drainageways
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, mountain big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Bucan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Humdun soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Bucan Soil for Selected Uses
Range seeding: Fair—too arid, large stones
Daily cover for landfill: Poor—large stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Humdun Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Bucan soil—VIIs, nonirrigated; Humdun soil—VIe, nonirrigated; Rock outcrop—VIIIs
Range site: Bucan soil—024X005N; Humdun soil—024X005N

262—Chen-Slaven-Chen, cobbly, association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Chen very gravelly loam, 4 to 15 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—40 percent
• Slaven loam, 15 to 30 percent slopes, very stony—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—25 percent
• Chen cobbly loam, 15 to 30 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Cumulic Haploxerolls, 2 to 8 percent slopes—Cumulic Haploxerolls, loamy-skeletal, mixed, frigid—6 percent
• Inclusion 2: Rock outcrop—5 percent
• Inclusion 3: Cumulic Haplaquolls, 0 to 4 percent slopes—Cumulic Haplaquolls, loamy-skeletal, mixed, frigid—2 percent
• Inclusion 4: Pachic Haploxerolls, 15 to 30 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Chen Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum influenced by loess and volcanic ash; source—volcanic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, rabbitbrush, Sandberg bluegrass

Typical Profile

0 to 10 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

10 to 16 inches—very cobbly clay, very gravelly clay, extremely gravelly clay; 0 to 45 percent cobbles and stones and 55 to 75 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-7

16 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 1.1 to 1.7 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Slaven Soil

Position on landscape: Middle and lower side slopes of mountains
Parent material: Kind—residuum influenced by loess and volcanic ash; source—chert, shale, and quartzite
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, Sandberg bluegrass, bottlebrush squirreltail
Rock fragments on surface: Kind—stones; percentage of surface covered—2

Typical Profile

0 to 5 inches—loam; 10 to 25 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6

5 to 22 inches—extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam; 75 to 85 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

22 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.0 to 2.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Chen, Cobbly, Soil

Position on landscape: Upper side slopes of mountains
Parent material: Kind—residuum influenced by loess and volcanic ash; source—volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, rabbitbrush, Sandberg bluegrass

Typical Profile

0 to 8 inches—cobbly loam; 20 to 25 percent cobbles and stones and 20 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 6.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4

8 to 17 inches—very cobbly clay, very gravelly clay, extremely gravelly clay; 5 to 45 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; neutral (pH 7.1); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

17 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None

Permeability: Very slow
Available water capacity: 1.7 to 2.0 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent to mountain drainageways
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Basin big sagebrush
Inclusion 2
Position on landscape: Scattered peaks of mountains
Contrasting features: Bedrock exposed at the surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Toe slopes of mountains adjacent to seeps and springs
Contrasting features: Receives additional soil moisture from runoff and lateral flow from seeps and springs
Distinctive present vegetation: Tufted hairgrass, alpine timothy
Inclusion 4
Position on landscape: North-facing side slopes of mountains
Contrasting features: Thick, dark colored surface layer and receives additional soil moisture from drifted snow
Distinctive present vegetation: Snowberry, Idaho fescue

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, recreation

Wildlife habitat elements:
Suitability of the Chen soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Slaven soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Chen, cobbly, soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Chen Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, too clayey
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Slaven Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, too clayey, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Chen, Cobbly, Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, too clayey
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones, thin layer

Interpretive Groups

Capability classification: Chen soil—VIIs, nonirrigated; Slaven soil—VIIs, nonirrigated; Chen, cobbly, soil—VIIs, nonirrigated
Range site: Chen soil—024X027N; Slaven soil—025X014N; Chen, cobbly, soil—024X027N

272—Cherry Spring-Enko association

Map Unit Setting

Position on landscape: Piedmont slope
Elevation: 5,000 to 5,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Cherry Spring very fine sandy loam, 2 to 8 percent slopes—Haploxerollic Durargids, fine-loamy, mixed, mesic—50 percent
• Enko very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Cortez very fine sandy loam, 2 to 4 percent slopes—Xerollic Nadurargids, fine, montmorillonitic, mesic—5 percent
• Inclusion 2: Kelk silt loam, 0 to 2 percent slopes, occasionally flooded—Durixerollic Camborthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Cherry Spring Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 7 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
7 to 29 inches—loam, silt loam, clay loam; 0 to 5 percent cobbles and stones and 5 to 20 percent pebbles (by weight); subangular blocky structure; hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6
29 to 41 inches—strongly cemented duripan
41 to 60 inches or more—stratified sandy loam to extremely gravelly sandy loam; 0 to 5 percent cobbles and stones and 35 to 65 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Above the duripan—moderately slow; below the duripan—moderately rapid
Available water capacity: 4.8 to 5.6 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Enko Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 7 inches—very fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
7 to 15 inches—loam, sandy loam, fine sandy loam; 0 to 15 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
15 to 60 inches or more—sandy loam, loam, fine sandy loam; 0 to 25 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-2, A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.4 to 8.5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3

Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Summits of upper fan piedmont remnants
Contrasting features: Clayey subsoil and an indurated duripan
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Inset fans
Contrasting features: Receives additional soil moisture from runoff and flooding
Distinctive present vegetation: Wyoming big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Cherry Spring soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Enko soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Cherry Spring Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan, low strength, shrink-swell
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Enko Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Cherry Spring soil—IIIe, irrigated, and VIIs, nonirrigated; Enko soil—IVe, irrigated, and VIs, nonirrigated
Range site: Cherry Spring soil—024X005N; Enko soil—024X005N

282—Chiara-Orovada association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,200 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Chiara very fine sandy loam, 2 to 8 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—50 percent
• Orovada very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Chiara very stony very fine sandy loam, 2 to 8 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—5 percent
• Inclusion 2: Goldrun fine sand, 2 to 8 percent slopes—Xeric Torripsamments, mixed, mesic—5 percent

Characteristics of the Chiara Soil

Position on landscape: Slightly dissected fan piedmont remnants
Parent material: Loess mantle high in volcanic ash over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Indian ricegrass, pine bluegrass

Typical Profile

0 to 5 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 16 inches—very fine sandy loam, silt loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm);

nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
16 inches—indurated duripan; massive; extremely hard, very firm

Soil and Water Features

Depth to hardpan: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.5 to 2.9 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Orovada Soil

Position on landscape: Inset fans
Parent material: Loess influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—slightly concave to slightly convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Indian ricegrass, spiny hopsage

Typical Profile

0 to 8 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent fan collars
Contrasting features: Stony surface layer
Distinctive present vegetation: Wyoming big sagebrush, pine bluegrass
Inclusion 2
Position on landscape: Sand sheets overplacing fan piedmont remnants
Contrasting features: Sandy throughout the soil profile
Distinctive present vegetation: Wyoming big sagebrush, needleandthread

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Chiara soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Chiara Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping, thin layer

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Chiara soil—IVe, irrigated, and VIIs, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated
Range site: Chiara soil—024X005N; Orovada soil—024X005N

283—Chiara-Tenabo association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,200 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Chiara very fine sandy loam, 4 to 15 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—50 percent
• Tenabo very fine sandy loam, 2 to 8 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—40 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids, 2 to 8 percent slopes—Durixerollic Camborthids, fine-loamy, mixed, mesic—7 percent
• Inclusion 2: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—3 percent

Characteristics of the Chiara Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium capped with loess high in volcanic ash
Slope features: Length—short; shape—smooth to slightly concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 16 inches—very fine sandy loam, silt loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
16 inches—indurated duripan; massive; extremely hard, very firm

Soil and Water Features

Depth to hardpan: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.5 to 2.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Tenabo Soil

Position on landscape: Summits and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium capped with loess high in volcanic ash
Slope features: Length—short; shape—smooth to convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 18 inches—clay loam, gravelly clay loam, silty clay loam; 5 to 30 percent pebbles (by weight); prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (2 to 4 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
18 to 40 inches—indurated duripan; massive; very hard, very firm

40 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sand; 5 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 9 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.8 to 4.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave inset fan remnants
Contrasting features: Very deep soil that receives additional soil moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye
Inclusion 2
Position on landscape: Adjacent to active channels on inset fans
Contrasting features: Very deep soil that receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Chiara soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Tenabo soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Chiara Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—piping, thin layer

Ratings of the Tenabo Soil for Selected Uses
Range seeding: Poor—too arid, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, too sandy
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—excess sodium, excess salt, seepage

Interpretive Groups

Capability classification: Chiara soil—IVe, irrigated, and VIIs, nonirrigated; Tenabo soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Chiara soil—024X005N; Tenabo soil—024X002N

284—Chiara-Dewar association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,900 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Chiara gravelly loam, 2 to 8 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—55 percent
• Dewar gravelly loam, 2 to 8 percent slopes—Xerollic Durargids, loamy, mixed, mesic, shallow—30 percent
Contrasting inclusions:
• Inclusion 1: Orovada gravelly loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—10 percent
• Inclusion 2: Duric Camborthids, 8 to 15 percent slopes—Duric Camborthids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 3: Typic Durargids, 2 to 8 percent slopes—

Typic Durargids, loamy, mixed, mesic, shallow—2 percent

Characteristics of the Chiara Soil

Position on landscape: Lower fan piedmont remnants
Parent material: Loess mantle high in volcanic ash over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, small rabbitbrush, phlox

Typical Profile

0 to 5 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4
5 to 16 inches—very fine sandy loam, silt loam; 0 to 5 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
16 inches—indurated duripan; massive; very hard, very firm

Soil and Water Features

Depth to hardpan: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.4 to 2.8 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Dewar Soil

Position on landscape: Upper fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—slightly convex to concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, small rabbitbrush, phlox

Typical Profile

0 to 4 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC, CL; estimated AASHTO classification—A-6
4 to 14 inches—gravelly silty clay loam, gravelly clay loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC; estimated AASHTO classification—A-6, A-7
14 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 13 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.8 to 2.2 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex inset fans
Contrasting features: Very deep soils
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail
Inclusion 2
Position on landscape: Convex scarps on the lower margins of fan piedmont remnants
Contrasting features: Very deep soils that have very gravelly profiles
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Convex slightly raised positions on summits of fan piedmont remnants
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Chiara soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Dewar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Chiara Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping, thin layer

Ratings of the Dewar Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, cemented pan
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Chiara soil—VIe, irrigated, and VIIs, nonirrigated; Dewar soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Chiara soil—028B010N; Dewar soil—028B010N

285—Chiara-Trunk-Midraw association

Map Unit Setting

Position on landscape: Hills and adjacent fan piedmonts
Elevation: 5,200 to 6,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Chiara very gravelly loam, 4 to 15 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—40 percent
• Trunk cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—30 percent
• Midraw very cobbly loam, 15 to 30 percent slopes—Xerollic Durargids, clayey, montmorillonitic, mesic, shallow—15 percent
Contrasting inclusions:
• Inclusion 1: Aridic Haploxerolls, 15 to 30 percent slopes—Aridic Haploxerolls, coarse-loamy, mixed, frigid—5 percent
• Inclusion 2: Durixerollic Camborthids, 2 to 8 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Durixerollic Camborthids, 15 to 30 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Chiara Soil

Position on landscape: Dissected summits, shoulders and side slopes of fan piedmont remnants
Parent material: Mixed alluvium capped by loess high in volcanic ash
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, spiny hopsage, small rabbitbrush, bluebunch wheatgrass, invading Utah juniper

Typical Profile

0 to 5 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
5 to 16 inches—very fine sandy loam, silt loam; 0 to 5 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
16 inches—indurated duripan; massive; extremely hard, very firm

Soil and Water Features

Depth to hardpan: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.4 to 2.8 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D

Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Trunk Soil

Position on landscape: Crests and east-, west-, and south-facing side slopes of hills
Parent material: Kind—colluvium and residuum; source—andesite and rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, spiny hopsage, bluebunch wheatgrass, small rabbitbrush, scattered Utah juniper

Typical Profile

0 to 5 inches—cobbly loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); granular; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
5 to 28 inches—gravelly clay loam, gravelly clay; 0 to 10 percent cobbles and stones and 20 to 50 percent pebbles (by weight); prismatic structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.0 to 3.9 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Midraw Soil

Position on landscape: South-facing side slopes of hills
Parent material: Kind—residuum and colluvium influenced by loess and volcanic ash; source—rhyolite, andesite, and tuffs
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, mountain big sagebrush, basin wildrye, Thurber needlegrass, invading Utah juniper

Typical Profile

0 to 6 inches—very cobbly loam; 30 to 40 percent cobbles and stones and 30 to 60 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-2
6 to 16 inches—gravelly clay, gravelly clay loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); prismatic structure; hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-7
16 to 31 inches—indurated duripan
31 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 22 to 35 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.3 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing side slopes of hills
Contrasting features: Deep soils with a thick, dark surface layer
Distinctive present vegetation: Mountain big sagebrush, snowberry
Inclusion 2
Position on landscape: Concave inset fans
Contrasting features: Very deep soils that receive additional soil moisture from runoff

Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 3

Position on landscape: Concave, north-facing side slopes of fan piedmont remnants

Contrasting features: Very deep soils that have slopes of 15 to 30 percent

Distinctive present vegetation: Mountain big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:

Suitability of the Chiara soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Suitability of the Midraw soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Chiara Soil for Selected Uses

Range seeding: Poor—droughty

Daily cover for landfill: Poor—cemented pan

Shallow excavations: Severe—cemented pan

Local roads and streets: Severe—cemented pan

Roadfill: Poor—cemented pan

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Poor—cemented pan

Pond reservoir areas: Severe—cemented pan, slope

Embankments, dikes, and levees: Severe—piping, thin layer

Ratings of the Trunk Soil for Selected Uses

Range seeding: Fair—droughty, too arid, large stones

Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones

Shallow excavations: Severe—depth to bedrock, slope

Local roads and streets: Severe—low strength, shrink-swell, slope

Roadfill: Poor—depth to bedrock, low strength

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Poor—small stones, slope

Pond reservoir areas: Severe—slope

Embankments, dikes, and levees: Severe—thin layer

Ratings of the Midraw Soil for Selected Uses

Range seeding: Poor—droughty, large stones

Daily cover for landfill: Poor—cemented pan, slope, small stones

Shallow excavations: Severe—cemented pan, slope, depth to bedrock

Local roads and streets: Severe—cemented pan, slope, shrink-swell

Roadfill: Poor—depth to bedrock, shrink-swell

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Poor—cemented pan, small stones, too clayey

Pond reservoir areas: Severe—cemented pan, slope

Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Chiara soil—IVs, irrigated, and VIIs, nonirrigated; Trunk soil—VIIe, nonirrigated; Midraw soil—VIIs, nonirrigated

Range site: Chiara soil—024X005N; Trunk soil—024X005N; Midraw soil—024X028N

286—Chiara-Jenor association

Map Unit Setting

Position on landscape: Fan piedmonts

Elevation: 5,200 to 5,600 feet

Average annual precipitation: About 8 inches

Average annual air temperature: About 49 degrees F

Frost-free season: About 110 days

Composition

Major components:

• Chiara fine sandy loam, 2 to 8 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—45 percent

• Jenor fine sandy loam, 2 to 8 percent slopes—Typic Durorthids, coarse-loamy, mixed, mesic—40 percent

Contrasting inclusions:

• Inclusion 1: Orovada fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—10 percent

• Inclusion 2: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Chiara Soil

Position on landscape: Side slopes of fan piedmont remnants

Parent material: Loamy mixed alluvium capped by loess high in volcanic ash

Slope features: Length—short; shape—convex

Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, pine bluegrass, spiny hopsage

Typical Profile

0 to 5 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated

Unified classification—SM; estimated AASHTO classification—A-4

5 to 16 inches—very fine sandy loam, silt loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

16 inches—indurated duripan; massive; extremely hard, very firm

Soil and Water Features

Depth to hardpan: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.4 to 2.8 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Jenor Soil

Position on landscape: Summits and shoulder slopes of fan piedmont remnants
Parent material: Loamy mixed alluvium influenced by loess
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—fine sandy loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—SM, SM-SC, ML, CL-ML; estimated AASHTO classification—A-4

6 to 16 inches—fine sandy loam, loam; 0 to 5 percent cobbles and stones and 5 to 25 percent pebbles (by weight); subangular blocky structure; soft, very hard, friable; strongly alkaline (pH 8.5); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—SM, SM-SC; estimated AASHTO classification—A-4

16 to 26 inches—fine sandy loam, sandy loam, gravelly loam; 0 to 5 percent cobbles and stones and 10 to 40 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM, SM-SC, ML, CL-ML; estimated AASHTO classification—A-4, A-2

26 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave inset fan remnants and fan drainageways
Contrasting features: Very deep soils
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Inclusion 2
Position on landscape: Concave inset fans
Contrasting features: Very deep soils that receive additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Chiara soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Jenor soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Chiara Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Local roads and streets: Improbable source—excess fines
Topsoil: Poor—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping, thin layer

Ratings of the Jenor Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—piping, area reclaim

Interpretive Groups

Capability classification: Chiara soil—IVe, irrigated, and VIIs, nonirrigated; Jenor soil—IIIe, irrigated, and VIIs, nonirrigated
Range site: Chiara soil—024X005N; Jenor soil—024X002N

290—Creemon silt loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent
• Inclusion 3: Wholan very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—5 percent

Characteristics of the Creemon Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Indian ricegrass

Typical Profile

0 to 10 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 15 inches—very fine sandy loam, silt loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 to 45 inches—stratified very fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
45 to 60 inches or more—stratified gravelly very fine sandy loam to fine sandy loam; 15 to 30 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 45 inches—moderate; below this depth—moderately rapid
Available water capacity: 9.7 to 11.6 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth upper margins of fan skirts

Contrasting features: Fine sandy loam throughout the soil profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Smooth lower margins of fan skirts adjacent to alluvial flats
Contrasting features: Finer textured throughout the soil profile
Distinctive present vegetation: Shadscale and bud sagebrush

Inclusion 3
Position on landscape: Adjacent smooth insert fans and fan drainageways
Contrasting features: Lacks layer of silica cementation and receives additional soil moisture from shallow, low-velocity runoff
Distinctive present vegetation: Winterfat, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland
Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt
Septic tank absorption fields: Moderate—percs slowly
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

291—Creemon silt loam, 2 to 4 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Creemon silt loam, 2 to 4 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 2 to 4 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 2: Whirlo silt loam, 2 to 4 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 3: Wholan stony fine sandy loam, 2 to 4 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—3 percent

Characteristics of the Creemon Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Indian ricegrass

Typical Profile

0 to 10 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 15 inches—very fine sandy loam, silt loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 to 45 inches—stratified very fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
45 to 60 inches or more—stratified gravelly very fine sandy loam to fine sandy loam; 15 to 30 percent

pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 45 inches—moderate; below this depth—moderately rapid
Available water capacity: 9.7 to 11.6 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth upper margins of fan skirts
Contrasting features: Fine sandy loam throughout the soil profile
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Smooth fan drainageways and adjacent to channels on inset fans
Contrasting features: Very gravelly substrata
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Adjacent smooth inset fans
Contrasting features: Stones cover about 1 percent of the surface
Distinctive present vegetation: Winterfat, Indian ricegrass

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily, excess salt, slope
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIe, irrigated, and VIIc, nonirrigated
Range site: 024X002N

292—Creemon silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Creemon silt loam, 0 to 2 percent slopes, occasionally flooded—Duric Camborthids, coarse-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent
• Inclusion 3: Wholan very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—5 percent

Characteristics of the Creemon Soil

Position on landscape: Inset fans
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Winterfat, saltbush, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 10 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4

10 to 15 inches—very fine sandy loam, silt loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4

15 to 28 inches—stratified very fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4

28 to 60 inches or more—stratified very fine sandy loam to silt loam; massive; soft, very friable; strongly alkaline (pH 8.8); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Frequency—occasional; duration—very brief; months—February through June
Permeability: Moderate
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth higher margins adjacent to fan skirts
Contrasting features: Fine sandy loam throughout the soil profile
Distinctive present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Inclusion 2
Position on landscape: Smooth lower margins adjacent to fan skirts
Contrasting features: Finer textured subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Smooth inset fans adjacent to channels
Contrasting features: Lacks layer of silica accumulation and receives additional soil moisture from shallow, low-velocity runoff
Distinctive present vegetation: Winterfat, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily, flooding
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIw, irrigated, and VIIw, nonirrigated
Range site: 024X014N

293—Creemon silt loam, strongly saline, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Creemon silt loam, strongly saline, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Batan silt loam, slightly saline, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—10 percent
• Inclusion 2: Broyles very fine sandy loam, moderately saline, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Creemon Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, spiny hopsage

Typical Profile

0 to 10 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 15 inches—very fine sandy loam, silt loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 to 45 inches—stratified very fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR 46 to 55); estimated Unified classification—ML; estimated AASHTO classification—A-4
45 to 60 inches or more—stratified gravelly very fine sandy loam to fine sandy loam; 15 to 30 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR 46 to 55); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 45 inches—moderate; below this depth—moderately rapid
Available water capacity: 9.7 to 11.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth alluvial flat remnants at lower margins of fan skirts
Contrasting features: Surface layer is slightly saline and soil is moderately well drained
Distinctive present vegetation: Shadscale, bud sagebrush, Indian ricegrass
Inclusion 2
Position on landscape: Upper part of fan skirts
Contrasting features: Fine sandy loam throughout the soil profile
Distinctive present vegetation: Black greasewood, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Excess salt, erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

294—Creemon-Orovada-Broyles association

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Creemon very fine sandy loam, 2 to 4 percent slopes, occasionally flooded—Duric Camborthids, coarse-silty, mixed, mesic—30 percent
• Orovada very fine sandy loam, 2 to 4 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—30 percent
• Broyles very fine sandy loam, 2 to 4 percent slopes, frequently flooded—Duric Camborthids, coarse-loamy, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Haplargids, 4 to 8 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—10 percent
• Inclusion 2: Durixerollic Camborthids, 2 to 8 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Creemon Soil

Position on landscape: Lower fan skirts
Parent material: Mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Winterfat, bud sagebrush, halogeton, bottlebrush squirreltail

Typical Profile

0 to 10 inches—very fine sandy loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 15 inches—very fine sandy loam, silt loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 to 28 inches—stratified very fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
28 to 60 inches or more—stratified very fine sandy loam to silt loam; massive; soft, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Frequency—occasional; duration—very brief; months—February through June
Permeability: Moderate
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Orovada Soil

Position on landscape: Fan skirt remnants
Parent material: Loess influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
20 to 60 inches or more—stratified fine sandy loam to

silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Broyles Soil

Position on landscape: Upper fan skirts
Parent material: Mixed alluvium
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Winterfat, halogeton, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

5 to 14 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; soft, very friable; strongly alkaline (pH 8.8); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

14 to 60 inches or more—gravelly fine sandy loam; 30 to 45 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Frequency—frequent; duration—very brief; months—December through May
Permeability: Moderately rapid
Available water capacity: 5.9 to 7.7 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent nonburied fan piedmont remnants
Contrasting features: Layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Inclusion 2
Position on landscape: Adjacent inset fans
Contrasting features: Very gravelly substratum
Distinctive present vegetation: Wyoming big sagebrush, Indian ricegrass

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Creemon soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Broyles soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Creemon Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping, excess salt

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Broyles Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Fair—small stones
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Creemon soil—IIw, irrigated, and VIIw, nonirrigated; Orovada soil—IIe, irrigated, and VIc, nonirrigated; Broyles soil—IIw, irrigated, and VIIw, nonirrigated
Range site: Creemon soil—024X014N; Orovada soil—024X020N; Broyles soil—024X014N

295—Creemon-Cren association

Map Unit Setting

Position on landscape: Fan skirts and inset fans
Elevation: 4,800 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—55 percent
• Cren silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-silty, mixed (calcareous), mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 0 to 2 percent slopes—Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Typic Torriorthents, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Xeric Torriorthents, 0 to 2 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent

Characteristics of the Creemon Soil

Position on landscape: Slightly dissected fan skirts
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 10 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 15 inches—very fine sandy loam, silt loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 to 45 inches—stratified very fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 30); estimated Unified classification—ML; estimated AASHTO classification—A-4
45 to 60 inches or more—stratified gravelly very fine sandy loam to fine sandy loam; 15 to 30 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 30); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 45 inches—moderate; below this depth—moderately rapid
Available water capacity: 9.7 to 11.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Cren Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium influenced by volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
7 to 26 inches—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
26 to 60 inches or more—stratified fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Active channels on lower part of inset fans
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Basin big sagebrush, black greasewood
Inclusion 2
Position on landscape: Fan drainageways
Contrasting features: Strongly salt- and sodium-affected surface layer
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 3
Position on landscape: Active channels on higher part of fan skirt and inset fans
Contrasting features: Frequently flooded
Distinctive present vegetation: Wyoming big sagebrush, black greasewood, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Creemon soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Cren soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Creemon Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Cren Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt

Interpretive Groups

Capability classification: Creemon soil—IIc, irrigated, and VIIc, nonirrigated; Cren soil—IIc, irrigated, and VIIc, nonirrigated
Range site: Creemon soil—024X002N; Cren soil—024X002N

296—Creemon-Hessing association

Map Unit Setting

Position on landscape: Fan skirts and inset fans
Elevation: 4,700 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—65 percent
• Hessing silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-silty, mixed, mesic—8 percent
• Inclusion 2: Duric Camborthids, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 3: Typic Camborthids, 0 to 4 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—3 percent

Characteristics of the Creemon Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile

0 to 10 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 15 inches—very fine sandy loam, silt loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 to 45 inches—stratified very fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 30); estimated Unified classification—ML; estimated AASHTO classification—A-4
45 to 60 inches or more—stratified gravelly very fine sandy loam to fine sandy loam; 15 to 30 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 30); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 45 inches—moderate; below this depth—moderately rapid
Available water capacity: 9.7 to 11.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Hessing Soil

Position on landscape: Inset fans
Parent material: Alluvium and loess with some influence of volcanic ash over coarse mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bug sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 4 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
4 to 11 inches—silt loam, silty clay loam; prismatic structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL; estimated AASHTO classification—A-6
11 to 18 inches—very fine sandy loam, silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
18 to 30 inches—gravelly loam; 35 to 45 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GM; estimated AASHTO classification—A-4
30 to 60 inches or more—stratified very gravelly loamy

coarse sand to extremely gravelly sand; 65 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.4); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 30 inches—moderate; below this depth—very rapid
Available water capacity: 6.0 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—3; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent to channels
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, spiny hopsage

Inclusion 2
Position on landscape: Lower margins of fan skirts
Contrasting features: Receives additional soil moisture from shallow, low-velocity surface flow
Distinctive present vegetation: Shadscale, bud sagebrush, winterfat

Inclusion 3
Position on landscape: Upper margins of fan skirts
Contrasting features: Very gravelly throughout the soil profile
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Creemon soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Hessing soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Creemon Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Hessing Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt

Interpretive Groups

Capability classification: Creemon soil—IIc, irrigated, and VIIc, nonirrigated; Hessing soil—IIs, irrigated, and VIIs, nonirrigated
Range site: Creemon soil—024X002N; Hessing soil—024X002N

297—Creemon-Orovada-Tulase association

Map Unit Setting

Position on landscape: Fan skirts and inset fans
Elevation: 5,500 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—45 percent
• Orovada very fine sandy loam, 0 to 2 percent slopes, rarely flooded—Durixerollic Camborthids, coarse-loamy, mixed, mesic—20 percent
• Tulase very fine sandy loam, 0 to 2 percent slopes—Durorthidic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Batan very fine sandy loam, 0 to 2 percent

slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Xeric Torriorthents, 0 to 2 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Durixerollic Camborthids, 0 to 4 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Creemon Soil

Position on landscape: Stable, lower fan skirts
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 10 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 15 inches—very fine sandy loam, silt loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 to 45 inches—stratified very fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
45 to 60 inches or more—stratified gravelly very fine sandy loam to fine sandy loam; 15 to 30 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 45 inches—moderate; below this depth—moderately rapid
Available water capacity: 9.7 to 11.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Orovada Soil

Position on landscape: Inset fans
Parent material: Loess influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, downy rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 8.6 to 9.8 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Tulase Soil

Position on landscape: Upper fan skirts
Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth

Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, bluebunch wheatgrass

Typical Profile

0 to 6 inches—very fine sandy loam; platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

6 to 60 inches or more—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 12.4 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex lower margins of fan skirts
Contrasting features: Strongly salt- and sodium-affected surface layer
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 2
Position on landscape: Adjacent to stream channels
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Basin big sagebrush, black greasewood

Inclusion 3
Position on landscape: Adjacent convex beach terrace remnants
Contrasting features: Very gravelly throughout the soil profile
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Creemon soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Tulase soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Creemon Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action, flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Tulase Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Creemon soil—IIc, irrigated, and VIIc, nonirrigated; Orovada soil—IIc, irrigated, and VIc, nonirrigated; Tulase soil—IIc, irrigated, and VIc, nonirrigated

Range site: Creemon soil—024X002N; Orovada soil—024X005N; Tulase soil—024X005N

298—Creemon-Misad association

Map Unit Setting

Position on landscape: Basin floor and beach terraces
Elevation: 5,000 to 5,100 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—60 percent
• Misad gravelly sandy loam, 2 to 4 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Duric Camborthids, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—6 percent
• Inclusion 2: Durorthidic Torriorthents, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Durixerollic Camborthids, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—2 percent
• Inclusion 4: Durorthidic Xeric Torriorthents, 0 to 2 percent slopes—Durorthidic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic—2 percent

Characteristics of the Creemon Soil

Position on landscape: Beach terrace
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 10 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR 2 to 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 15 inches—very fine sandy loam, silt loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 to 45 inches—stratified very fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 30); estimated Unified classification—ML; estimated AASHTO classification—A-4
45 to 60 inches or more—stratified gravelly very fine sandy loam to fine sandy loam; 15 to 30 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 30); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 45 inches—moderate; below this depth—moderately rapid
Available water capacity: 9.7 to 11.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Misad Soil

Position on landscape: Offshore bars
Parent material: Gravelly stratified lacustrine sediments influenced by volcanic ash
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—gravelly sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, SM-SC; estimated AASHTO classification—A-1, A-2
7 to 31 inches—stratified fine sandy loam to very gravelly sandy loam; 5 to 10 percent cobbles and stones and 40 to 60 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM, GM-GC, SM, SM-SC; estimated AASHTO classification—A-1, A-2
31 to 60 inches or more—very gravelly loamy sand to

extremely gravelly coarse sand; 5 to 10 percent cobbles and stones and 60 to 80 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 31 inches—moderately rapid; below this depth—rapid
Available water capacity: 2.9 to 4.1 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flat remnants between bars
Contrasting features: Fine sandy loam throughout the soil profile
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 2
Position on landscape: Alluvial flats along lower part of unit
Contrasting features: Silty clay loam subsoil, moderately well drained
Distinctive present vegetation: Shadscale, bud sagebrush, black greasewood

Inclusion 3
Position on landscape: Concave, narrow inset fans dissecting offshore bars
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Inclusion 4
Position on landscape: Fan skirt margins on upper part of unit
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Creemon soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Misad soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Creemon Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Misad Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—seepage, small stones, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Creemon soil—IIc, irrigated, and VIIc, nonirrigated; Misad soil—IIIe, irrigated, and VIIs, nonirrigated
Range site: Creemon soil—024X002N; Misad soil—024X002N

300—Cren silt loam

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,800 to 5,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Cren silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—6 percent
• Inclusion 2: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—3 percent
• Inclusion 3: Hessing silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—3 percent
• Inclusion 4: Pumper silt loam, 0 to 2 percent slopes—Typic Camborthids, sandy-skeletal, mixed, mesic—3 percent

Characteristics of the Cren Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
7 to 26 inches—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
26 to 60 inches or more—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent lower inset fans
Contrasting features: Noncalcareous subsoil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Smooth upper margins of fan skirts
Contrasting features: Coarser textured throughout the soil profile
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Adjacent, smooth, upper inset fans
Contrasting features: Gravelly substratum
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 4
Position on landscape: Areas adjacent to stream channels
Contrasting features: Very gravelly throughout the soil profile
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features of the Cren Soil for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

303—Cren-Doowak-Relley association

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Cren silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-silty, mixed (calcareous), mesic—40 percent
• Doowak very gravelly loamy sand, 0 to 2 percent slopes—Xeric Torriorthents, sandy-skeletal, mixed, mesic—25 percent
• Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Raglan silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—6 percent
• Inclusion 2: Xeric Torriorthents 0 to 2 percent slopes, frequently flooded—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Xeric Torriorthents 0 to 2 percent slopes, frequently flooded—Xeric Torriorthents, sandy-skeletal, mixed, mesic—4 percent

Characteristics of the Cren Soil

Position on landscape: Upper part of fan skirts
Parent material: Mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 7 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
7 to 26 inches—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
26 to 60 inches or more—stratified fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Doowak Soil

Position on landscape: Adjacent inset fans
Parent material: Mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage

Typical Profile

0 to 6 inches—very gravelly loamy sand; 5 to 10 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1
6 to 60 inches or more—stratified extremely gravelly sand to extremely gravelly loamy sand; 5 to 10 percent cobbles and stones and 75 to 90 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Very rapid
Available water capacity: 1.9 to 3.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.05; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Relley Soil

Position on landscape: Lower part of fan skirts
Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 8 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

8 to 16 inches—silt loam; 0 to 5 percent pebbles (by weight); prismatic structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

16 to 28 inches—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

28 to 60 inches or more—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 20 to 30); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10.8 to 12.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower margin of fan skirt
Contrasting features: Loam substrata
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Concave stringers adjacent to channels
Contrasting features: Receives additional moisture from runoff and flooding
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 3
Position on landscape: Areas adjacent to deep channels
Contrasting features: Receives additional moisture from runoff and flooding
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Cren soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Doowak soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Relley soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Cren Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt

Ratings of the Doowak Soil for Selected Uses

Range seeding: Poor—too sandy, droughty, small stones
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Relley Soil for Selected Uses

Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt

Interpretive Groups

Capability classification: Cren soil—IIc, irrigated, and VIIc, nonirrigated; Doowak soil—VIIs, nonirrigated; Relley soil—IIc, irrigated, and VIIc, nonirrigated
Range site: Cren soil—024X002N; Doowak soil—024X020N; Relley soil—024X002N

304—Cren-Raglan-Batan association

Map Unit Setting

Position on landscape: Fan skirts and alluvial flats
Elevation: 4,700 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Cren silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-silty, mixed (calcareous), mesic—60 percent
• Raglan silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—20 percent
• Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Typic Camborthids, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Cren Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 7 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
7 to 26 inches—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
26 to 60 inches or more—stratified fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Raglan Soil

Position on landscape: Higher parts of alluvial flat remnants
Parent material: A loess mantle high in volcanic ash over mixed alluvium
Slope features: Length—long; shape—convex

Dominant present vegetation: Bud sagebrush, shadscale

Typical Profile

0 to 6 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

6 to 14 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

14 to 60 inches or more—stratified very fine sandy loam to silty clay loam; 0 to 15 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, ML; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 9.6 to 11.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Batan Soil

Position on landscape: Lower parts of alluvial flat remnants
Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—concave
Dominant present vegetation: Black greasewood, shadscale, bud sagebrush

Typical Profile

0 to 5 inches—silt loam; platy structure; hard, very friable; very strongly alkaline (pH 9.4); strongly saline (more than 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

5 to 68 inches or more—stratified silt loam to silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.3 to 12.5 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Concave areas adjacent to channels
Contrasting features: Sandy loam substratum
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:

Suitability of the Cren soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Raglan soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Batan soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Cren Soil for Selected Uses

Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt

Ratings of the Raglan Soil for Selected Uses

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt

Ratings of the Batan Soil for Selected Uses

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Cren soil—IIc, irrigated, and VIIc, nonirrigated; Raglan soil—IIc, irrigated, and VIIc, nonirrigated; Batan soil—IIIs, irrigated, and VIIs, nonirrigated
Range site: Cren soil—024X002N; Raglan soil—024X002N; Batan soil—024X003N

310—Davey fine sandy loam

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,600 to 5,600 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Davey fine sandy loam, 0 to 2 percent slopes—Xerollic Camborthids, sandy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Goldrun fine sand, 0 to 4 percent slopes—Xeric Torripsamments, mixed, mesic—10 percent
• Inclusion 2: Orovada fine sandy loam, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Davey Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Basin big sagebrush, spiny hopsage, needleandthread, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 5 inches—fine sandy loam; platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2
5 to 20 inches—fine sandy loam; subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
20 to 60 inches or more—loamy fine sand, fine sand; 0 to 15 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 20 inches—moderately rapid; below this depth—rapid
Available water capacity: 4.4 to 5.8 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Rounded and undulating dunes overplacing fan skirts
Contrasting features: Sandy throughout the soil profile
Distinctive present vegetation: Indian ricegrass, basin big sagebrush

Inclusion 2
Position on landscape: Smooth fan skirt remnants
Contrasting features: Loamy throughout the soil
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—very poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—soil blowing
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, piping
Drainage: Deep to water
Irrigation: Droughty, soil blowing
Terraces and diversions: Too sandy, soil blowing

Interpretive Groups

Capability classification: IIIs, irrigated, and VIc, nonirrigated
Range site: 024X017N

312—Davey fine sandy loam, cemented substratum

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Davey fine sandy loam, cemented substratum, 0 to 2 percent slopes—Xerollic Camborthids, sandy, mixed, mesic—85 percent

Contrasting inclusions:
• Inclusion 1: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 2: Goldrun fine sand, 0 to 4 percent slopes—Xeric Torripsamments, mixed, mesic—5 percent
• Inclusion 3: Orovada fine sandy loam, 2 to 4 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Davey Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Big sagebrush, spiny hopsage, kochia

Typical Profile

0 to 20 inches—fine sandy loam; prismatic structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
20 to 50 inches—loamy fine sand; 0 to 15 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-2
50 to 60 inches—strongly cemented duripan

Soil and Water Features

Depth to hardpan: 50 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Above the hardpan—rapid
Available water capacity: 4.4 to 5.8 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower fan skirt margins
Contrasting features: Silty subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Dunes overplacing fan skirts
Contrasting features: Sandy throughout the soil profile
Distinctive present vegetation: Basin big sagebrush
Inclusion 3
Position on landscape: Adjacent inset fans
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—very poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—soil blowing
Daily cover for landfill: Fair—too sandy, cemented pan, thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Fair—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer, small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing, excess salt
Terraces and diversions: Soil blowing

Interpretive Groups

Capability classification: IIIs, irrigated, and VIc, nonirrigated
Range site: 024X017N

313—Davey-Goldrun complex

Map Unit Setting

Position on landscape: Sand sheets
Elevation: 4,800 to 5,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Davey fine sandy loam, 0 to 2 percent slopes—Xerollic Camborthids, sandy, mixed, mesic—65 percent
• Goldrun fine sand, 0 to 4 percent slopes—Xeric Torripsamments, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Orovada very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—10 percent

Characteristics of the Davey Soil

Position on landscape: Sand sheets
Parent material: Mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, spiny hopsage, bottlebrush squirreltail, cheatgrass, Wyoming big sagebrush

Typical Profile

0 to 5 inches—fine sandy loam; platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2
5 to 20 inches—fine sandy loam; subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
20 to 60 inches or more—loamy fine sand, fine sand; 0 to 15 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 20 inches—moderately rapid; below this depth—rapid
Available water capacity: 4.4 to 5.8 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Goldrun Soil

Position on landscape: Dunes
Parent material: Sandy eolian materials influenced by volcanic ash
Slope features: Length—short; shape—undulating
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Indian ricegrass, spiny hopsage

Typical Profile

0 to 7 inches—fine sand; massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2
7 to 60 inches or more—fine sand; massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Rapid
Available water capacity: 4.2 to 5.4 inches
Water-supplying capacity: 9 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave inset fans dissecting sand sheets
Contrasting features: Loamy subsoil
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability of the Davey soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—very poor; shallow water areas—very poor
Suitability of the Goldrun soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—very poor; shallow water areas—very poor

Ratings and Restrictive Features of the Davey Soil for Selected Uses and Practices
Range seeding: Poor—soil blowing
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, piping
Drainage: Deep to water
Irrigation: Droughty, soil blowing
Terraces and diversions: Too sandy, soil blowing

Ratings and Restrictive Features of the Goldrun Soil for Selected Uses and Practices
Range seeding: Poor—soil blowing, too sandy
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, seepage
Drainage: Deep to water
Irrigation: Droughty, fast intake, soil blowing
Terraces and diversions: Too sandy, soil blowing

Interpretive Groups

Capability classification: Davey soil—IIIs, irrigated, and VIc, nonirrigated; Goldrun soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Davey soil—024X017N; Goldrun soil—024X001N

340—Duffer very fine sandy loam

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,500 to 4,600 feet
Average annual precipitation: About 7 inches

Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Duffer very fine sandy loam, 0 to 2 percent slopes—Aquic Calciorthids, fine-silty, carbonatic, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Sombrero very fine sandy loam, 0 to 2 percent slopes—Aquentic Durorthids, loamy, mixed, mesic, shallow—6 percent
• Inclusion 2: Reese silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic—3 percent
• Inclusion 3: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—3 percent
• Inclusion 4: Sonoma silty clay loam, 0 to 2 percent slopes, frequently flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—3 percent

Characteristics of the Duffer Soil

Position on landscape: Flood plain remnnts
Parent material: Mixed alluvium influenced by volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Rubber rabbitbrush, alkali sacaton, inland saltgrass, iodinebush

Typical Profile

0 to 4 inches—very fine sandy loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); strongly saline (30 to 40 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
4 to 29 inches—silt loam, silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
29 to 60 inches or more—stratified very fine sandy loam to silty clay loam; massive; slightly hard and hard, friable and firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL, CL-ML; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: February through June—18 to 36 inches; rest of year—below 36 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 10.0 to 12.4 inches
Water-supplying capacity: 12 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Irregularly shaped areas on adjacent stream terraces
Contrasting features: Strongly cemented duripan within a depth of 20 inches
Distinctive present vegetation: Black greasewood, basin wildrye, inland saltgrass
Inclusion 2
Position on landscape: Outer margins of flood plains
Contrasting features: Occasionally flooded
Distinctive present vegetation: Black greasewood, basin wildrye, inland saltgrass
Inclusion 3
Position on landscape: Adjacent alluvial flat remnants
Contrasting features: Moderately well drained
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 4
Position on landscape: Lower flood plains
Contrasting features: Frequently flooded
Distinctive present vegetation: Basin wildrye, creeping wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Fair—wetness
Shallow excavations: Severe—wetness

Local roads and streets: Severe—low strength, frost action
Roadfill: Fair—low strength, wetness, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness, excess salt
Drainage: Frost action, excess salt
Irrigation: Wetness, soil blowing, erodes easily
Terraces and diversions: Erodes easily, wetness, soil blowing

Interpretive Groups

Capability classification: VIw, irrigated; VIIw, nonirrigated
Range site: 024X010N

370—Enko fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,700 to 5,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 8 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Enko fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Goldrun fine sand—Xeric Torripsamments, mixed, mesic—10 percent

Characteristics of the Enko Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass

Typical Profile

0 to 7 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
7 to 15 inches—loam, sandy loam, fine sandy loam; 0 to 15 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
15 to 60 inches or more—sandy loam, loam, fine sandy loam; 0 to 25 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-2, A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.4 to 8.5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Sand sheets overplacing fan skirts
Contrasting features: Sandy throughout the soil profile
Distinctive present vegetation: Basin big sagebrush, Indian ricegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings for Selected Uses
Range seeding: Fair—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt

Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: IVe, irrigated, and VIs, nonirrigated
Range site: Enko soil—024X005N

371—Enko-Shabliss-Orovada association

Map Unit Setting

Position on landscape: Piedmonts slopes
Elevation: 4,800 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Enko fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—60 percent
• Shabliss very fine sandy loam, 15 to 30 percent slopes—Haploxerollic Durorthids, loamy, mixed, mesic, shallow—15 percent
• Orovada very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torripsamments, 8 to 15 percent slopes—Xeric Torripsamments, mixed, mesic—10 percent

Characteristics of the Enko Soil

Position on landscape: Fan aprons overplacing fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass

Typical Profile

0 to 7 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
7 to 15 inches—loam, sandy loam, fine sandy loam; 0 to 15 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
15 to 60 inches or more—sandy loam, loam, fine sandy loam; 0 to 25 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-2, A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.4 to 8.5 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Shabliss Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Loess capped mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass

Typical Profile

0 to 6 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 16 inches—very fine sandy loam, loam, silt loam; 0 to 5 percent cobbles and stones and 0 to 5 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
16 to 34 inches—strongly cemented duripan; platy structure; very hard, very firm
34 to 60 inches or more—loamy sand, gravelly loamy sand; 0 to 5 percent cobbles and stones and 20 to

40 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.7 to 3.2 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—3
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Orovada Soil

Position on landscape: Fan skirts
Parent material: Loess capped mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Sandberg bluegrass

Typical Profile

0 to 8 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); prismatic structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Sand sheets and sand dunes overplacing fan skirts
Contrasting features: Sandy throughout the soil profile
Distinctive present vegetation: Indian ricegrass, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Enko soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Shabliss soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Enko Soil for Selected Uses
Range seeding: Fair—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—poor—excess salt
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Shabliss Soil for Selected Uses
Range seeding: Fair—too arid, cemented pan
Daily cover for landfill: Poor—cemented pan, slope
Shallow excavations: Severe—cemented pan, cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Fair—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, slope

Pond reservoir areas: Severe—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—piping, seepage

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Enko soil—IVe, irrigated, and VIs, nonirrigated; Shabliss soil—VIIe, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated
Range site: Enko soil—024X005N; Shabliss soil—024X005N; Orovada soil—024X020N

400—Glean-Walti-Cleavage association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,600 to 8,000 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 60 days

Composition

Major components:
• Glean gravelly loam, 30 to 50 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—40 percent
• Walti gravelly loam, 15 to 30 percent slopes—Aridic Argixerolls, fine, montmorillonitic, frigid—25 percent
• Cleavage extremely gravelly loam, 15 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Aridic Argixerolls, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—6 percent
• Inclusion 2: Rock outcrop—5 percent
• Inclusion 3: Rubble land—2 percent
• Inclusion 4: Pachic Haploxerolls, 15 to 50 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Glean Soil

Position on landscape: Side slopes of mountains
Parent material: Mixed colluvium and residuum
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, rubber rabbitbrush, arrowleaf balsamroot, bluebunch wheatgrass
Surface cover: 20 percent pebbles, 1 percent cobbles

Typical Profile

0 to 6 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2, A-4
6 to 49 inches—very gravelly loam, very gravelly sandy loam; 0 to 25 percent cobbles and stones and 40 to 75 percent pebbles (by weight); massive; soft, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
49 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.1 to 5.0 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.15; T value—3; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Walti Soil

Position on landscape: Shoulders and upper side slopes of mountains at higher elevations
Parent material: Kind—residuum and colluvium; source—rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, Idaho fescue, bluebunch wheatgrass

Typical Profile

0 to 4 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm);

nonsodic (SAR less than 2); estimated Unified classification—SM-SC, GM-GC, CL-ML; estimated AASHTO classification—A-4

4 to 10 inches—gravelly clay loam, clay loam; 0 to 10 percent cobbles and stones and 10 to 35 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6

10 to 30 inches—clay, gravelly clay; 0 to 10 percent cobbles and stones and 10 to 35 percent pebbles (by weight); prismatic structure; very hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH, MH; estimated AASHTO classification—A-7

30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.7 to 4.8 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Cleavage Soil

Position on landscape: Crests of mountains
Parent material: Kind—gravelly residuum; source—rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, black sagebrush, Sandberg bluegrass, Idaho fescue

Typical Profile

0 to 4 inches—extremely gravelly loam; 0 to 10 percent cobbles and stones and 75 to 85 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 0 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex back slopes of mountains
Contrasting features: Loamy soils with bedrock at a depth of 20 to 40 inches
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue, bluebunch wheatgrass

Inclusion 2
Position on landscape: Rimrock on shoulder slopes of mountains and scattered peaks
Contrasting features: Bedrock exposed at the surface
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Side slopes of mountains below rock outcrop
Contrasting features: More than 90 percent stones on the soil surface
Distinctive present vegetation: Barren

Inclusion 4
Position on landscape: Concave snow pockets on side slopes of mountains below shoulders
Contrasting features: Receives additional soil moisture from drifted snow
Distinctive present vegetation: Snowberry, mountain big sagebrush, currant, mountain brome

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Glean soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good
Suitability of the Walti soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Glean Soil for Selected Uses
Range seeding: Fair—droughty, small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Walti Soil for Selected Uses
Range seeding: Fair—erodes easily, rooting depth
Daily cover for landfill: Poor—depth to bedrock, too clayey, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—depth to bedrock, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer, hard to pack

Ratings of the Cleavage Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Glean soil—VIIe, nonirrigated; Walti soil—VIIe, nonirrigated; Cleavage soil—VIIs, nonirrigated
Range site: Glean soil—024X023N; Walti soil—024X027N; Cleavage soil—024X016N

411—Golconda-Blackhawk association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Golconda very fine sandy loam, 2 to 8 percent slopes, stony—Haplic Nadurargids, fine-loamy, mixed, mesic—50 percent
• Blackhawk very fine sandy loam, 0 to 4 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—35 percent
Contrasting inclusions:
• Inclusion 1: Misad very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—10 percent
• Inclusion 2: Durixerollic Camborthids, 2 to 4 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Golconda Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Loess high in volcanic ash over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, spiny hopsage, bottlebrush squirreltail
Rock fragments on the surface: Kind—stones; percentage of surface covered—1 percent

Typical Profile

0 to 8 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 27 inches—clay loam, gravelly clay loam; 10 to 45 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 9.0); strongly saline (16 to 25 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, GC;

estimated AASHTO classification—A-6, A-7
27 to 43 inches—strongly cemented duripan; massive; extremely hard, extremely firm
43 to 60 inches or more—very gravelly loamy coarse sand, very gravelly sandy loam; 50 to 75 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GP-GM, GM, GP; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.2 to 5.1 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Blackhawk Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Loamy mixed alluvium influenced by loess
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, spiny hopsage, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 14 inches—loam, very fine sandy loam, silt loam; 0 to 5 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 9.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
14 to 17 inches—strongly cemented hardpan; massive; very hard, very firm
17 to 38 inches—stratified sandy loam to extremely gravelly loamy coarse sand; 10 to 30 percent pebbles (by weight); massive; slightly hard, friable; very strongly alkaline (pH 9.2); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2
38 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sand; 50 to 80 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.0); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—GP-GM, GP, SP-SM, SP; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Above the hardpan—moderate; below the hardpan—very rapid
Available water capacity: 2.2 to 2.6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Inset fan remnants
Contrasting features: Very deep soil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Inset fans
Contrasting features: Very deep soil that receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Golconda soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Blackhawk soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Golconda Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium

Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, seepage

Ratings of the Blackhawk Soil for Selected Uses

Range seeding: Poor—too arid, droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Moderate—cemented pan
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess salt

Interpretive Groups

Capability classification: Golconda soil—IVe, irrigated, and VIIs, nonirrigated; Blackhawk soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Golconda soil—024X002N; Blackhawk soil—024X002N

412—Golconda-Dun Glen association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Golconda gravelly very fine sandy loam, 4 to 8 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—65 percent
• Dun Glen very fine sandy loam, 2 to 4 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Haplic Nadurargids, 4 to 8 percent slopes—Haplic Nadurargids, loamy, mixed, mesic, shallow—9 percent
• Inclusion 2: Typic Torriorthents, 2 to 4 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—4 percent
• Inclusion 3: Xerollic Camborthids, 2 to 4 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—2 percent

Characteristics of the Golconda Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Loess influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 10 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 35 to 45 percent pebbles (by weight); loam; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
10 to 23 inches—clay loam, gravelly clay loam, silty clay loam; 10 to 45 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
23 to 36 inches—strongly cemented duripan; massive; extremely hard, extremely firm
36 to 60 inches—very gravelly loamy coarse sand, very gravelly sandy loam; 50 to 75 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.2 to 5.1 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—4

Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Dun Glen Soil

Position on landscape: Broad inset fans
Parent material: Loamy mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 3 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

3 to 10 inches—very fine sandy loam, silt loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

10 to 60 inches or more—fine sandy loam, very fine sandy loam; 0 to 15 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 6.8 to 8.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex summits and shoulder slopes of fan piedmont remnants
Contrasting features: Duripan within a depth of 20 inches
Distinctive present vegetation: Downy rabbitbrush, shadscale

Inclusion 2
Position on landscape: Adjacent convex fan skirts
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Bud sagebrush, shadscale

Inclusion 3
Position on landscape: Concave inset fans adjacent to channels
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Golconda soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Dun Glen soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Golconda Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—cemented pan, small stones, seepage
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—low strength
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium, excess salt

Ratings of the Dun Glen Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones

Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Golconda soil—IVe, irrigated, and VIIs, nonirrigated; Dun Glen soil—IIe, irrigated, and VIIc, nonirrigated
Range site: Golconda soil—024X002N; Dun Glen soil—024X002N

413—Golconda-Blownout land complex

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Golconda gravelly very fine sandy loam, 2 to 8 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—60 percent
• Blownout land—25 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 2 to 8 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—9 percent
• Inclusion 2: Typic Torriorthents, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 3: Minat very cobbly loam, 15 to 50 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—1 percent

Characteristics of the Golconda Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess capped mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and 35 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GC; estimated AASHTO classification—A-4
8 to 27 inches—clay loam, gravelly clay loam; 10 to 45 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 9.0); strongly saline (16 to 25 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, GC; estimated AASHTO classification—A-6, A-7
27 to 43 inches—strongly cemented duripan; massive; extremely hard, extremely firm
43 to 60 inches or more—extremely gravelly loamy coarse sand, very gravelly sandy loam; 50 to 85 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 36); estimated Unified classification—GP-GM, GM, GP; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.2 to 5.1 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of Blownout Land

Position on landscape: Eroded depressional areas covered with a surface pavement of pebbles
Slope features: Length—short; shape—concave
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Position on landscape: Inset fans on upper part of fan piedmont remnants
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Inset fans on lower part of fan piedmont remnants
Contrasting features: Very deep soils that have a very gravelly substratum
Distinctive present vegetation: Shadscale
Inclusion 3
Position on landscape: Side slopes of fan piedmont remnants near areas of deeply incised inset fans
Contrasting features: Slopes of 15 to 50 percent
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Golconda soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Golconda Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, seepage, excess sodium

Interpretive Groups

Capability classification: Golconda soil—IVe, irrigated, and VIIs, nonirrigated; Blownout land—VIIIs
Range site: Golconda soil—024X002N

420—Goldrun fine sand, 0 to 4 percent slopes

Map Unit Setting

Position on landscape: Sand sheets on fan skirts
Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Goldrun fine sand, 0 to 4 percent slopes—Xeric Torripsamments, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Davey fine sandy loam, 0 to 2 percent slopes—Xerollic Camborthids, sandy, mixed, mesic—5 percent
• Inclusion 2: Broyles very fine sandy loam, 2 to 4 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—3 percent
• Inclusion 3: Orovada fine sandy loam, 2 to 4 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—2 percent

Characteristics of the Goldrun Soil

Position on landscape: Sand sheets on fan skirts
Parent material: Eolian material influenced by volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Indian ricegrass, basin big sagebrush

Typical Profile

0 to 7 inches—fine sand; massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2
7 to 60 inches or more—fine sand; massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Rapid
Available water capacity: 4.2 to 5.4 inches
Water-supplying capacity: 9 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Nonburied fan skirts on the upper part of the unit
Contrasting features: High water-supplying capacity
Distinctive present vegetation: Big sagebrush, needleandthread
Inclusion 2
Position on landscape: Nonburied fan skirts on the lower part of the unit
Contrasting features: Slightly salt- and sodium-affected substratum
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Adjacent inset fans
Contrasting features: Loamy substratum

Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—very poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—soil blowing, too sandy
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, seepage
Drainage: Deep to water
Irrigation: Droughty, fast intake, soil blowing
Terraces and diversions: Too sandy, soil blowing

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 024X001N

422—Goldrun-Old Camp association

Map Unit Setting

Position on landscape: Foothills
Elevation: 4,800 to 5,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Goldrun loamy sand, 15 to 30 percent slopes—Xeric Torripsamments, mixed, mesic—50 percent
• Old Camp very cobbly loam, 4 to 8 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—10 percent
• Inclusion 2: Orovada fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Goldrun Soil

Position on landscape: Sand sheets adjacent to and overplacing parts of foothills
Parent material: Eolian sands
Slope features: Length—short; shape—convex
Dominant present vegetation: Rubber rabbitbrush, cheatgrass

Typical Profile

0 to 7 inches—loamy sand; massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2
7 to 60 inches or more—fine sand; massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Rapid
Available water capacity: 4.2 to 5.4 inches
Water-supplying capacity: 9 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—2
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Old Camp Soil

Position on landscape: Crests and side slopes of foothills
Parent material: Kind—residuum influenced by volcanic ash; source—basalt
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, cheatgrass

Typical Profile

0 to 2 inches—very cobbly loam; 25 to 55 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated

Unified classification—GM, SM, GM-GC, SM-SC; estimated AASHTO classification—A-4, A-2
2 to 14 inches—very stony clay loam, very cobbly clay loam, extremely stony clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Rimrock and scattered peaks of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Inset fans
Contrasting features: Very deep soil that is sandy loam throughout the soil profile
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Goldrun soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Goldrun Soil for Selected Uses
Range seeding: Poor—soil blowing, too sandy, erodes easily
Daily cover for landfill: Poor—too sandy, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Fair—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—piping, seepage

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock, large stones
Local roads and streets: Severe—depth to bedrock, large stones
Roadfill: Poor—depth to bedrock, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Goldrun soil—IVs, irrigated, and VIIs, nonirrigated; Old Camp soil—VIIs, nonirrigated
Range site: Goldrun soil—024X001N; Old Camp soil—024X005N

441—Gund-Umberland association

Map Unit Setting

Position on landscape: Lake plains
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Gund silt loam, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty over clayey, mixed, nonacid, mesic—50 percent
• Umberland silt loam, 0 to 2 percent slopes, nonflooded—Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Aquic Durorthidic Torriorthents, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—8 percent
• Inclusion 2: Aeric Halaquepts, 0 to 2 percent slopes—

Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 3: Playas—3 percent

Characteristics of the Gund Soil

Position on landscape: Higher part of lake plain terraces
Parent material: Silty alluvium with a component of loess over lacustrine sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Basin big sagebrush, black greasewood, basin wildrye, rubber rabbitbrush

Typical Profile

0 to 4 inches—silt loam; platy structure; soft, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
4 to 23 inches—silt loam; platy structure; hard, firm; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6
23 to 60 inches or more—silty clay, clay; prismatic structure; hard, friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CH; estimated AASHTO classification—A-7

Soil and Water Features

Depth to seasonal high water table: February through June—36 to 42 inches; rest of year—below 42 inches
Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 8.6 to 10.7 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Characteristics of the Umberland Soil

Position on landscape: Lower part of lake plain terraces
Parent material: Silty mixed lacustrine sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, black greasewood, bottlebrush squirreltail

Typical Profile

0 to 4 inches—silt loam; platy structure; hard, friable; strongly alkaline (pH 9.2); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
4 to 31 inches—silty clay, silty clay loam, clay; massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
31 to 60 inches or more—silty clay, silty clay loam, clay; massive; slightly hard, friable; strongly alkaline (pH 8.5); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 9.0 to 12.5 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth, highest part of lake plain terraces
Contrasting features: Silt loam throughout
Distinctive present vegetation: Black greasewood, shadscale, and bud sagebrush
Inclusion 2
Position on landscape: Slightly concave, lower margins of lake plains
Contrasting features: Frequently flooded
Distinctive present vegetation: Black greasewood, basin wildrye, rubber rabbitbrush, inland saltgrass
Inclusion 3
Position on landscape: Dry lake extensions and irregularly shaped sink areas
Contrasting features: Ponded
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Gund soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—fair
Suitability of the Umberland soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Gund Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, excess salt, hard to pack
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Umberland Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, hard to pack, excess sodium
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, frost action, shrink-swell
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Gund soil—VIIw, nonirrigated; Umberland soil—VIIs, nonirrigated
Range site: Gund soil—024X006N; Umberland soil—024X003N

442—Gund-Bubus-Wendane association

Map Unit Setting

Position on landscape: Basin floor
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Gund silt loam, strongly saline-sodic, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty over clayey, mixed, nonacid, mesic—35 percent
• Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—30 percent
• Wendane silt loam, 0 to 2 percent slopes, frequently flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Aquic Torriorthents, 0 to 2 percent slopes—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—7 percent
• Inclusion 2: Durorthidic Torriorthents, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—4 percent
• Inclusion 3: Aeric Halaquepts, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—4 percent

Characteristics of the Gund Soil

Position on landscape: Lake plain terraces
Parent material: Silty mixed alluvium with a component of loess over lacustrine sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, bud sagebrush

Typical Profile

0 to 4 inches—silt loam; platy structure; soft, very friable; strongly alkaline (pH 9.0); strongly saline (75 to 100 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
4 to 23 inches—silt loam; platy structure; hard, firm; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 50 to 80); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6
23 to 60 inches or more—silty clay, clay loam; prismatic structure; hard, friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CH; estimated AASHTO classification—A-7

Soil and Water Features

Depth to seasonal high water table: February through January—60 to 72 inches; rest of year—below 72 inches

Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 8.6 to 10.7 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Characteristics of the Bubus Soil

Position on landscape: Alluvial flat remnants
Parent material: Mixed alluvium high in pyroclastics
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, black greasewood, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 60 inches or more—stratified sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Wendane Soil

Position on landscape: Alluvial flats
Parent material: Mixed silty alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye, inland saltgrass

Typical Profile

0 to 13 inches—silt loam; platy structure; slightly hard, very friable; very strongly alkaline (pH 9.6); strongly saline (30 to 50 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 27 inches—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
27 to 60 inches or more—stratified silt loam to clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 35); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through July—30 to 48 inches; rest of year—below 48 inches
Flooding: Frequency—frequent; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent channeled and smooth inset fans
Contrasting features: Slightly salt and sodium affected
Distinctive present vegetation: Basin big sagebrush, black greasewood
Inclusion 2
Position on landscape: Slightly convex remnant shorelines and offshore bars
Contrasting features: Coarse textured, well drained soil that receives additional moisture from runoff

Distinctive present vegetation: Black greasewood, shadscale

Inclusion 3

Position on landscape: Lower lake terraces subject to ponding
Contrasting features: Seasonal ponding
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:

Suitability of the Gund soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—fair
Suitability of the Bubus soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Wendane soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings of the Gund Soil for Selected Uses

Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, excess salt, hard to pack
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Bubus Soil for Selected Uses

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings of the Wendane Soil for Selected Uses

Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—flooding, wetness
Local roads and streets: Severe—flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Gund soil—VIIw, nonirrigated; Bubus soil—IIs, irrigated, and VIIs, nonirrigated; Wendane soil—VIIw, nonirrigated
Range site: Gund soil—024X008N; Bubus soil—024X003N; Wendane soil—024X007N

443—Gund-Batan association

Map Unit Setting

Position on landscape: Basin floor
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:

• Gund silt loam, strongly saline-sodic, drained, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine silty over clayey, mixed, nonacid, mesic—65 percent
• Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—25 percent

Contrasting inclusions:

• Inclusion 1: Aeric Halaquepts, 0 to 2 percent slopes—Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic—5 percent
• Inclusion 2: Aeric Halaquepts, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—3 percent
• Inclusion 3: Aeric Halaquepts, 0 to 2 percent slopes—Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic—2 percent

Characteristics of the Gund Soil

Position on landscape: Lake plain terraces
Parent material: Silty mixed alluvium with a large component of loess over clayey lacustrine sediments
Slope features: Length—long; shape—smooth

Dominant present vegetation: Black greasewood, bottlebrush squirreltail, shadscale

Typical Profile

0 to 4 inches—silt loam; platy structure; soft, very friable; strongly alkaline (pH 9.0); strongly saline (75 to 100 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

4 to 23 inches—silt loam; platy structure; hard, firm; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 50 to 80); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

23 to 60 inches or more—silty clay, clay; prismatic structure; hard, friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CH; estimated AASHTO classification—A-7

Soil and Water Features

Depth to seasonal high water table: February through June—60 to 72 inches; rest of year—below 72 inches
Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 8.6 to 10.7 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Characteristics of the Batan Soil

Position on landscape: Alluvial flat remnants
Parent material: Kind—alluvium influenced by loess and volcanic ash; source—volcanic rock high in pyroclastics
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, black greasewood, bottlebrush squirreltail

Typical Profile

0 to 5 inches—silt loam; platy structure; hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 40 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4

5 to 68 inches or more—stratified silt loam to silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.1 to 12.3 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lake plains
Contrasting features: Subject to ponding, poorly drained
Distinctive present vegetation: Black greasewood
Inclusion 2
Position on landscape: Channeled areas on alluvial flats
Contrasting features: Poorly drained
Distinctive present vegetation: Black greasewood, basin wildrye, rubber rabbitbrush
Inclusion 3
Position on landscape: Slightly concave areas on alluvial flats
Contrasting features: Year-round high water table at a depth of less than 10 inches
Distinctive present vegetation: Alkali bluegrass, alkali rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Gund soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Batan soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Gund Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, excess salt, hard to pack

Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Batan Soil for Selected Uses

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Gund soil—VIIw, nonirrigated; Batan soil—IIIs, irrigated, and VIIs, nonirrigated
Range site: Gund soil—024X008N; Batan soil—024X003N

461—Hapgood-Packer-Layview association

Map Unit Setting

Position on landscape: Mountains
Elevation: 8,000 to 9,800 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 50 days

Composition

Major components:
• Hapgood very gravelly loam, 30 to 50 percent slopes—Pachic Cryoborolls, loamy-skeletal, mixed—40 percent
• Packer extremely gravelly loam, 15 to 50 percent slopes—Argic Cryoborolls, loamy-skeletal, mixed—25 percent
• Layview very gravelly sandy loam, 8 to 15 percent slopes—Argic Lithic Cryoborolls, loamy-skeletal, mixed—15 percent
Contrasting inclusions:
• Inclusion 1: Entic Cryumbrepts, 30 to 50 percent slopes—Entic Cryumbrepts, loamy-skeletal, mixed—7 percent
• Inclusion 2: Rock outcrop—6 percent
• Inclusion 3: Argic Cryoborolls, 15 to 30 percent slopes—Argic Cryoborolls, loamy-skeletal, mixed—5 percent
• Inclusion 4: Rubble land—2 percent

Characteristics of the Hapgood Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—colluvium influenced by volcanic ash over residuum; source—tuff and quartzite
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, lupine, snowberry, Idaho fescue, Letterman needlegrass, mountain brome

Typical Profile

0 to 17 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
17 to 40 inches—very gravelly loam; 5 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
40 to 60 inches or more—very cobbly loam, very gravelly loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 4.8 to 6.0 inches
Water-supplying capacity: 16 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—moderate
Potential frost action: Moderate

Characteristics of the Packer Soil

Position on landscape: Windswept shoulders and upper side slopes of mountains
Parent material: Kind—residuum influenced by loess and volcanic ash; source—chert, quartzite, and volcanic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, black sagebrush, Sandberg bluegrass, bluebunch wheatgrass, Idaho fescue

Typical Profile

0 to 10 inches—extremely gravelly loam; 15 to 25 percent cobbles and stones and 70 to 85 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2
10 to 21 inches—extremely cobbly clay loam, extremely cobbly loam; 40 to 55 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
21 to 60 inches or more—extremely cobbly loam, extremely cobbly sandy loam; 40 to 55 percent cobbles and stones and 55 to 70 percent pebbles (by weight); massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.6 to 5.4 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Layview Soil

Position on landscape: Windswept crests and shoulder slopes of mountains
Parent material: Kind—residuum; source—andesite and tuffs
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, black sagebrush, Sandberg bluegrass, low rabbitbrush, Idaho fescue

Typical Profile

0 to 3 inches—very gravelly sandy loam; 10 to 15 percent cobbles and stones and 45 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
3 to 12 inches—very gravelly loam, very gravelly clay loam; 10 to 15 percent cobbles and stones and 45 to 70 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
12 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.9 to 1.1 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Sheltered concave snow pockets below shoulder slopes of mountains
Contrasting features: Slightly or medium acid throughout the profile
Distinctive present vegetation: Lupine, Letterman needlegrass
Inclusion 2
Position on landscape: Scattered peaks and rimrock on shoulder slopes of mountains
Contrasting features: Bedrock exposed at the soil surface

Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Convex lower side slopes of mountains
Contrasting features: Horizon of clay accumulation, rock fragments are mostly pebbles
Distinctive present vegetation: Low sagebrush, Idaho fescue
Inclusion 4
Position on landscape: Side slopes of mountains below rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren
Other inclusions of minor extent
Position on landscape: Concave snow pockets
Distinctive present vegetation: Aspen, mountain brome

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Hapgood soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good
Suitability of the Packer soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Layview soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Hapgood Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Ratings of the Packer Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, large stones

Ratings of the Layview Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—small stones, depth to bedrock
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Hapgood soil—VIIs, nonirrigated; Packer soil—VIIs, nonirrigated; Layview soil—VIIs, nonirrigated
Range site: Hapgood soil—024X032N; Packer soil—024X016N; Layview soil—024X016N

466—Hapgood-Tusel-Winada association

Map Unit Setting

Position on landscape: Mountains
Elevation: 7,200 to 8,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 40 days

Composition

Major components:
• Hapgood very gravelly loam, 30 to 50 percent slopes—Pachic Cryoborolls, loamy-skeletal, mixed—35 percent
• Tusel very gravelly loam, 30 to 50 percent slopes—Argic Pachic Cryoborolls, loamy-skeletal, mixed—30 percent
• Winada gravelly loam, 50 to 75 percent slopes—Argic Cryoborolls, loamy-skeletal, mixed—25 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—4 percent
• Inclusion 2: Argic Lithic Cryoborolls, 30 to 75 percent slopes—Argic Lithic Cryoborolls, loamy-skeletal, mixed—4 percent
• Inclusion 3: Pachic Cryoborolls, 30 to 50 percent slopes—Pachic Cryoborolls, coarse-loamy, mixed—2 percent

Characteristics of the Hapgood Soil

Position on landscape: Side slopes of mountains

Parent material: Kind—very gravelly colluvium influenced by volcanic ash; source—tuffs
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, snowberry, mountain brome, Sandberg bluegrass, bottlebrush squirreltail, arrowleaf balsamroot

Typical Profile

0 to 17 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
17 to 40 inches—very gravelly loam; 5 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
40 to 60 inches or more—very cobbly loam, very gravelly loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 4.8 to 6.0 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Tusel Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—very gravelly colluvium and residuum; source—chert, quartzite, and shale
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Snowberry, mountain big sagebrush, Idaho fescue, lanceleaf rabbitbrush

Typical Profile

0 to 20 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 60 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; slightly acid (pH 6.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2
20 to 42 inches—extremely gravelly sandy clay loam, very gravelly clay loam; 15 to 45 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2
42 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.4 to 5.4 inches
Water-supplying capacity: 16 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.15; T value—3; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Winada Soil

Position on landscape: Shoulders and upper side slopes of mountains
Parent material: Kind—very gravelly residuum and colluvium; source—shale
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Douglas rabbitbrush, bluebunch wheatgrass
Surface cover: 30 percent pebbles

Typical Profile

0 to 12 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, GM, GM-GC, SM-SC; estimated AASHTO classification—A-4
12 to 24 inches—very gravelly clay loam; 0 to 5 percent

cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
24 to 36 inches—weathered bedrock
36 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.5 to 3.1 inches
Water-supplying capacity: 12 inches
Runoff: Very rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Rimrock and scattered peaks
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Ridges and shoulder slopes of mountains
Contrasting features: Hard bedrock within a depth of 20 inches
Distinctive present vegetation: Low sagebrush, black sagebrush, Sandberg bluegrass
Inclusion 3
Position on landscape: Concave snow pockets and back slopes of mountains
Contrasting features: Higher water-supplying capacity
Distinctive present vegetation: Mountain big sagebrush, snowberry, Sandberg bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Hapgood soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good
Suitability of the Tusel soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good
Suitability of the Winada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Hapgood Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Ratings of the Tusel Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Winada Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slopes
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Hapgood soil—VIIs, nonirrigated; Tusel soil—VIIs, nonirrigated; Winada soil—VIIe, nonirrigated
Range site: Hapgood soil—024X032N; Tusel soil—024X023N; Winada soil—024X027N

467—Hapgood-Sumine-Cleavage association

Map Unit Setting

Position on landscape: Mountains
Elevation: 7,000 to 8,600 feet
Average annual precipitation: About 15 inches

Average annual air temperature: About 42 degrees F
Frost-free season: About 50 days

Composition

Major components:
• Hapgood very gravelly loam, 30 to 50 percent slopes—Pachic Cryoborolls, loamy-skeletal, mixed—35 percent
• Sumine very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—30 percent
• Cleavage extremely gravelly loam, 30 to 75 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Argic Pachic Cryoborolls, 30 to 75 percent slopes—Argic Pachic Cryoborolls, loamy-skeletal, mixed—10 percent
• Inclusion 2: Rock outcrop—3 percent
• Inclusion 3: Pachic Cryoborolls, 15 to 30 percent slopes—Pachic Cryoborolls, fine-loamy, mixed—2 percent

Characteristics of the Hapgood Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium and residuum influenced by volcanic ash; source—extrusive volcanic rock
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Idaho fescue, mountain brome, slender wheatgrass, mountain big sagebrush

Typical Profile

0 to 17 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
17 to 40 inches—very gravelly loam; 5 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
40 to 60 inches or more—very cobbly loam, very gravelly loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 4.8 to 6.0 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Sumine Soil

Position on landscape: East-, west-, and south-facing side slopes of mountains
Parent material: Kind—residuum; source—chert
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Bluebunch wheatgrass, basin wildrye, mountain big sagebrush

Typical Profile

0 to 6 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 40 to 55 percent pebbles (by weight); granular structure; soft, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
6 to 28 inches—very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.8 to 4.1 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C

Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Cleavage Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Idaho fescue, low sagebrush, black sagebrush

Typical Profile

0 to 4 inches—extremely gravelly loam; 0 to 10 percent cobbles and stones and 75 to 85 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 0 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: North-facing ridges and shoulders of mountains
Contrasting features: Thick, dark colored surface layer, bedrock at a depth of 20 to 30 inches, lacks a layer of clay accumulation
Distinctive present vegetation: Black sagebrush, low sagebrush
Inclusion 2
Position on landscape: Scattered peaks and severely eroded side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Sheltered, north-facing snow pockets of mountains
Contrasting features: Moderately well drained
Distinctive present vegetation: Aspen

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Hapgood soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Hapgood Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and the Cleavage Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Hapgood soil—VIIs, nonirrigated; Sumine soil—VIIs, nonirrigated; Cleavage soil—VIIs, nonirrigated
Range site: Hapgood soil—024X032N; Sumine soil—024X029N; Cleavage soil—024X016N

482—Humdun-Havingdon-Bucan association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 5,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Humdun silt loam, gravelly substratum, 30 to 50 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, frigid—35 percent
• Havingdon gravelly silt loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—25 percent
• Bucan cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 2 to 8 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed, nonacid, frigid—7 percent
• Inclusion 2: Humdun silt loam, 50 to 75 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, frigid—5 percent
• Inclusion 3: Rock outcrop—3 percent

Characteristics of the Humdun Soil

Position on landscape: North-facing side slopes of foothills
Parent material: Kind—loess influenced by volcanic ash capping colluvium; source—sedimentary tuffs
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Thurber needlegrass, Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 6 inches—silt loam; platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 24 inches—loam, very fine sandy loam, silt loam; massive; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
24 to 41 inches—loam, very fine sandy loam, silt loam; massive; soft, very friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
41 to 60 inches or more—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10.3 to 12.1 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Havingdon Soil

Position on landscape: South-, east-, and west-facing, upper side slopes of foothills
Parent material: Kind—residuum influenced by loess and volcanic ash; source—chert
Slope features: Length—short; shape—convex

Dominant present vegetation: Bluebunch wheatgrass, Thurber needlegrass, big sagebrush
Surface cover: 30 percent pebbles, 10 percent stones

Typical Profile

0 to 3 inches—gravelly silt loam; 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-4
3 to 22 inches—very gravelly clay, very gravelly sandy clay, extremely gravelly clay loam; 65 to 85 percent pebbles (by weight); massive; very hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
22 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 26 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.8 to 2.3 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Bucan Soil

Position on landscape: South-, east-, and west-facing, lower side slopes of foothills
Parent material: Kind—residuum capped with loess influenced by volcanic ash; source—volcanic rock
Slope features: Length—long; shape—concave
Dominant present vegetation: Thurber needlegrass, Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 5 inches—cobbly loam; 20 to 25 percent cobbles and stones and 20 to 30 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
5 to 15 inches—clay; 0 to 10 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-7
15 to 42 inches—cobbly clay, gravelly clay loam, gravelly clay; 10 to 30 percent cobbles and stones and 15 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-7
42 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 7.2 to 8.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—3; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow canyon bottoms of foothills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush
Inclusion 2
Position on landscape: North-facing concave pockets on foothills
Contrasting features: Receives additional moisture from drifting snow
Distinctive present vegetation: Idaho fescue
Inclusion 3
Position on landscape: Rimrock and scattered peaks of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Humdun soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Havingdon soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bucan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Humdun Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—seepage

Ratings of the Havingdon Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Bucan Soil for Selected Uses
Range seeding: Fair—droughty, erodes easily
Daily cover for landfill: Poor—large stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Interpretive Groups

Capability classification: Humdun soil—VIIe, nonirrigated; Havingdon soil—VIIe, nonirrigated; Bucan soil—VIe, nonirrigated
Range site: Humdun soil—024X005N; Havingdon soil—024X035N; Bucan soil—024X005N

486—Havingdon-Burrita association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,400 to 6,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Havingdon gravelly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—45 percent
• Burrita extremely cobbly loam, 15 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 30 to 50 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Bojo extremely gravelly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy, mixed, mesic—5 percent
• Inclusion 3: Xerollic Haplargids, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—5 percent

Characteristics of the Havingdon Soil

Position on landscape: Side slopes of foothills
Parent material: Kind—residuum and colluvium influenced by loess and volcanic ash; source—metavolcanic rocks
Slope features: Length—long; shape—concave to smooth
Dominant present vegetation: Bluebunch wheatgrass, Thurber needlegrass, big sagebrush

Typical Profile

0 to 3 inches—gravelly loam; 25 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
3 to 22 inches—very gravelly clay, very gravelly sandy clay, extremely gravelly clay loam; 65 to 85 percent pebbles (by weight); massive; very hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
22 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 26 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.8 to 2.3 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Burrita Soil

Position on landscape: Shoulders and upper side slopes of foothills
Parent material: Kind—residuum; source—metavolcanic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Thurber needlegrass, Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 3 inches—extremely cobbly loam; 40 to 60 percent cobbles and stones and 45 to 70 percent pebbles (by weight); platy; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
3 to 18 inches—very cobbly clay, very stony clay loam, very gravelly clay loam; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7
18 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.5 to 2.0 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Drainageways of foothills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Lower elevation, south-facing foot slopes of foothills
Contrasting features: Soil is loamy, shallow to bedrock, and droughty
Distinctive present vegetation: Shadscale
Inclusion 3
Position on landscape: Higher elevation, south-facing sides slopes of foothills
Contrasting features: Thick surface layer
Distinctive present vegetation: Mountain big sagebrush, globemallow

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Havingdon soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Havingdon Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Burrita Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, large stones, slope
Local roads and streets: Severe—depth to bedrock, slope, large stones

Roadfill: Poor—depth to bedrock, large stones, slope
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Havingdon soil—VIIe, nonirrigated; Burrita soil—VIIs, nonirrigated
Range site: Havingdon soil—024X035N; Burrita soil—024X005N

511—Hessing silt loam

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,800 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Hessing silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 2: Antel silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—4 percent
• Inclusion 3: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 4: Pumper silt loam, 0 to 2 percent slopes—Typic Camborthids, sandy-skeletal, mixed, mesic—2 percent

Characteristics of the Hessing Soil

Position on landscape: Fan skirts
Parent material: Silty alluvium and loess influenced by volcanic ash over coarse mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, pepperweed

Typical Profile

0 to 4 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
4 to 11 inches—silt loam, silty clay loam; prismatic structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 5 to 10); estimated Unified classification—CL; estimated AASHTO classification—A-6
11 to 18 inches—very fine sandy loam, silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 5 to 10); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
18 to 30 inches—gravelly loam; 35 to 45 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GM; estimated AASHTO classification—A-4
30 to 60 inches or more—stratified very gravelly loamy coarse sand to extremely gravelly sand; 65 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.4); strongly saline (16 to 25 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—GP-GM, GW-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 30 inches—moderate; below this depth—very rapid
Available water capacity: 6.0 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—3; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth lower margins of fan skirts
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Smooth alluvial flat remnants at lower margins of fan skirts
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Indian ricegrass, shadscale, bud sagebrush

Inclusion 3
Position on landscape: Alluvial flat remnants adjacent to old channels
Contrasting features: Silty and calcareous throughout the profile
Distinctive present vegetation: Black greasewood, bud sagebrush, shadscale
Inclusion 4
Position on landscape: Concave areas adjacent to channels
Contrasting features: Very gravelly throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: IIs, irrigated, and VIIs, nonirrigated
Range site: 024X002N

512—Hessing-Relley association

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,800 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Hessing gravelly silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—55 percent
• Relley silt loam, 0 to 2 percent slopes, frequently flooded—Duric Camborthids, fine-silty, mixed, mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Pumper gravelly very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, sandy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Creemon very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 3: Antel sandy clay loam, 0 to 2 percent slopes, occasionally flooded—Duric Camborthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Hessing Soil

Position on landscape: Broad, upper fan skirts
Parent material: Loess and silty alluvium over coarse mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 4 inches—gravelly silt loam; 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
4 to 11 inches—silt loam, silty clay loam; prismatic structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL; estimated AASHTO classification—A-6
11 to 18 inches—very fine sandy loam, silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
18 to 30 inches—gravelly loam; 35 to 45 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—GM; estimated AASHTO classification—A-4

30 to 60 inches or more—stratified very gravelly loamy coarse sand to extremely gravelly sand; 65 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.4); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GP-GM, GW-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 30 inches—moderate; below this depth—very rapid
Available water capacity: 6.0 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—3; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Relley Soil

Position on landscape: Broad, lower fan skirts
Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Saltbush, bottlebrush squirreltail, Indian ricegrass

Typical Profile

0 to 8 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

8 to 16 inches—silt loam; 0 to 5 percent pebbles (by weight); prismatic structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

16 to 28 inches—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

28 to 60 inches or more—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 20 to 30); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Flooding: Frequency—frequent; duration—very brief; months—December through June
Permeability: Moderate
Available water capacity: 10.8 to 12.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Stream terraces adjacent to fan skirts
Contrasting features: Very gravelly and sandy throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Lower margins of fan skirts and inset fans
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Irregularly shaped, active flood plains adjacent to fan skirts
Contrasting features: Receives additional moisture during spring runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Hessing soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Relley soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Hessing Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt

Ratings of the Relley Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt

Interpretive Groups

Capability classification: Hessing soil—IIs, irrigated, and VIIs, nonirrigated; Relley soil—IIIw, irrigated, and VIIw, nonirrigated
Range site: Hessing soil—024X002N; Relley soil—024X012N

530—Humboldt fine sandy loam

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,450 to 4,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Humboldt fine sandy loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine, montmorillonitic (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Paranat silt loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Rose Creek silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Sonoma silty clay loam, 0 to 2 percent slopes, frequently flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Humboldt Soil

Position on landscape: Flood plains
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Basin wildrye, Nevada bluegrass

Typical Profile

0 to 11 inches—fine sandy loam; prismatic structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM; estimated AASHTO classification—A-4
11 to 60 inches or more—stratified silty clay loam to clay; 0 to 10 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—MH; estimated AASHTO classification—A-7

Soil and Water Features

Depth to seasonal high water table: December through July—6 to 24 inches; rest of year—below 24 inches
Flooding: Frequency—frequent; duration—brief or long; months—December through June
Permeability: Moderately slow
Available water capacity: 9.8 to 11.1 inches
Water-supplying capacity: 12 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Higher areas of flood plains
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Basin wildrye, creeping wildrye
Inclusion 2
Position on landscape: Areas adjacent to stream channels
Contrasting features: Stratified sand to silt loam throughout the profile

Distinctive present vegetation: Basin wildrye, willow, rose

Inclusion 3

Position on landscape: Side channels and backwater areas along the outer margins of the delineations

Contrasting features: Less organic matter in the surface layer

Distinctive present vegetation: Creeping wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:

Suitability for named elements: Grain and seed crops (irrigated)—very poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—good; shallow water areas—good

Ratings and Restrictive Features of the Soil for Selected Uses and Practices

Range seeding: Fair—excess salt

Daily cover for landfill: Poor—too clayey, wetness, hard to pack

Shallow excavations: Severe—wetness

Local roads and streets: Severe—flooding, low strength, wetness

Roadfill: Poor—low strength, wetness

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Poor—wetness, too clayey

Pond reservoir areas: Slight

Embankments, dikes, and levees: Severe—hard to pack, wetness

Drainage: Flooding, frost action, poor outlets

Irrigation: Wetness

Terraces and diversions: Poor outlets, wetness

Interpretive Groups

Capability classification: Vw, irrigated, and Vw, nonirrigated

Range site: 025X001N

531—Humboldt silty clay

Map Unit Setting

Position on landscape: Flood plains

Elevation: 4,450 to 4,600 feet

Average annual precipitation: About 7 inches

Average annual air temperature: About 49 degrees F

Frost-free season: About 110 days

Composition

Major components:

• Humboldt silty clay, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine, montmorillonitic (calcareous), mesic—85 percent

Contrasting inclusions:

• Inclusion 1: Paranat silt loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—5 percent

• Inclusion 2: Rose Creek silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, coarse-loamy, mixed, mesic—5 percent

• Inclusion 3: Sonoma silty clay loam, 0 to 2 percent slopes, frequently flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Humboldt Soil

Position on landscape: Flood plains

Parent material: Kind—alluvium; source—dominantly volcanic rock

Slope features: Length—long; shape—smooth

Dominant present vegetation: Basin wildrye, Nevada bluegrass

Typical Profile

0 to 11 inches—silty clay; prismatic structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—MH; estimated AASHTO classification—A-7

11 to 60 inches or more—stratified silty clay loam to clay; 0 to 10 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—MH; estimated AASHTO classification—A-7

Soil and Water Features

Depth to seasonal high water table: December through July—6 to 24 inches; rest of year—below 24 inches

Flooding: Frequency—frequent; duration—brief or long; months—December through June

Permeability: Moderately slow

Available water capacity: 10.0 to 11.3 inches

Water-supplying capacity: 12 inches

Runoff: Very slow

Hydrologic group: D

Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low

Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Higher areas on flood plains
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Creeping wildrye, sedge, basin wildrye
Inclusion 2
Position on landscape: Areas adjacent to stream channels
Contrasting features: Stratified sand to silt loam throughout the profile
Distinctive present vegetation: Basin wildrye, rose
Inclusion 3
Position on landscape: Side channels and backwater areas along the outer margins of the delineations
Contrasting features: Less organic matter in the surface layer
Distinctive present vegetation: Creeping wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—very poor; domestic grasses and legumes (irrigated)—very poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—good; shallow water areas—good

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Fair—excess salt, too clayey
Daily cover for landfill: Poor—too clayey, wetness, hard to pack
Shallow excavations: Severe—wetness
Local roads and streets: Severe—flooding, low strength, wetness
Roadfill: Poor—low strength, wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—wetness, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—hard to pack, wetness
Drainage: Flooding, percs slowly, poor outlets
Irrigation: Wetness
Terraces and diversions: Poor outlets, wetness

Interpretive Groups

Capability classification: Vw, irrigated, and Vw, nonirrigated
Range site: 025X001N

532—Humboldt silty clay loam, slightly saline

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,450 to 4,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Humboldt silty clay loam, slightly saline, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine, montmorillonitic (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Paranat silt loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Soolake very fine sandy loam, 0 to 2 percent slopes—Typic Torriorthents, sandy, mixed, mesic—3 percent
• Inclusion 3: Sonoma silt loam, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—2 percent

Characteristics of the Humboldt Soil

Position on landscape: Flood plains
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Silver sagebrush, basin wildrye, creeping wildrye, inland saltgrass, alkali sacaton

Typical Profile

0 to 11 inches—silty clay loam; prismatic structure; hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—CL; estimated AASHTO classification—A-7
11 to 60 inches or more—stratified silty clay loam to clay; 0 to 10 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.9); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—MH; estimated AASHTO classification—A-7

Soil and Water Features

Depth to seasonal high water table: December through June—6 to 24 inches; rest of year—below 24 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through June

Permeability: Moderately slow
Available water capacity: 10.0 to 11.3 inches
Water-supplying capacity: 12 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Higher areas on flood plains
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Creeping wildrye, basin wildrye
Inclusion 2
Position on landscape: Fan skirts from adjacent fan piedmonts overplacing the flood plains
Contrasting features: Sandy throughout the profile, somewhat excessively drained
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Side channels and backwater areas along the outer margins of the delineations
Contrasting features: Less organic matter in the surface layer
Distinctive present vegetation: Alkali cordgrass

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—very poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—good; shallow water areas—good

Ratings and Restrictive Features of the Soil for Selected Uses and Practices
Range seeding: Poor—excess salt, too clayey
Daily cover for landfill: Poor—too clayey, wetness, hard to pack
Shallow excavations: Severe—wetness
Local roads and streets: Severe—flooding, low strength, wetness
Roadfill: Poor—low strength, wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—wetness, excess salt, too clayey
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—hard to pack, wetness, excess salt
Drainage: Flooding, frost action
Irrigation: Wetness, erodes easily
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: Vw, irrigated, and Vw, nonirrigated
Range site: 025X001N

571—Jenor-Blacka very fine sandy loams

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 4,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Jenor very fine sandy loam, 0 to 2 percent slopes—Typic Durorthids, coarse-loamy, mixed, mesic—45 percent
• Blacka very fine sandy loam, 0 to 2 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Jenor very fine sandy loam, 2 to 4 percent slopes—Typic Durorthids, coarse-loamy, mixed, mesic—8 percent
• Inclusion 2: Blacka very fine sandy loam, 2 to 4 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—7 percent

Characteristics of the Jenor Soil

Position on landscape: Upper part of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 6 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
6 to 16 inches—fine sandy loam, loam; 0 to 5 percent cobbles and stones and 5 to 25 percent pebbles (by weight); massive; soft, friable; strongly alkaline (pH

8.5); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM, SM-SC; estimated AASHTO classification—A-4

16 to 26 inches—fine sandy loam, sandy loam, gravelly loam; 0 to 5 percent cobbles and stones and 10 to 40 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM, SM-SC, ML, CL-ML; estimated AASHTO classification—A-4, A-2

26 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.0 to 3.1 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Blacka Soil

Position on landscape: Lower part of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 8 inches—very fine sandy loam; prismatic structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 2 to 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

8 to 21 inches—fine sandy loam, very fine sandy loam; prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

21 to 31 inches—strongly cemented duripan; massive; very hard, very firm

31 to 64 inches or more—stratified sandy loam to loam; massive; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to hardpan: 20 to 26 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Shoulder slopes of upper fan piedmont remnants
Contrasting features: Slopes of 2 to 4 percent
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Shoulder slopes of lower fan piedmont remnants
Contrasting features: Slopes of 2 to 4 percent
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland
Potential uses: Rangeland, wildlife habitat, irrigated cropland, recreation

Wildlife habitat elements:
Suitability of the Jenor soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetlands plants—poor; shallow water areas—very poor
Suitability of the Blacka soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features of the Jenor Soil for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing, cemented pan
Terraces and diversions: Cemented pan

Ratings and Restrictive Features of the Blacka Soil for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Moderate—cemented pan
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—cemented pan, thin layer
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Cemented pan, erodes easily
Terraces and diversions: Cemented pan, erodes easily

Interpretive Groups

Capability classification: Jenor soil—IVs, irrigated, and VIIs, nonirrigated; Blacka soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Jenor soil—024X002N; Blacka soil—024X002N

573—Jenor-Beoska-Broyles association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 4,600 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Jenor very fine sandy loam, 2 to 8 percent slopes—Typic Durorthids, coarse-loamy, mixed, mesic—40 percent
• Beoska very fine sandy loam, 2 to 4 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—25 percent
• Broyles very fine sandy loam, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Orovada sandy loam, eroded, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—8 percent
• Inclusion 2: Tenabo very fine sandy loam, 2 to 4 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—4 percent
• Inclusion 3: Durorthidic Xeric Torriorthents, 0 to 2 percent slopes—Durorthidic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—3 percent

Characteristics of the Jenor Soil

Position on landscape: Higher summits and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very fine sandy loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
6 to 16 inches—fine sandy loam, loam; 0 to 5 percent cobbles and stones and 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.5); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—SM, SM-SC; estimated AASHTO classification—A-4
16 to 26 inches—fine sandy loam, sandy loam, gravelly loam; 0 to 5 percent cobbles and stones and 10 to 40 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM, SM-SC, ML, CL-ML; estimated AASHTO classification—A-4, A-2
26 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.0 to 3.7 inches
Water-supplying capacity: 7 inches

Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Beoska Soil

Position on landscape: Lower summits and shoulder slopes of fan piedmont remnants
Parent material: Loess capped mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, small rabbitbrush

Typical Profile

0 to 13 inches—very fine sandy loam; 5 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

55 to 60 inches or more—stratified gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 25 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.9 to 9.8 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Broyles Soil

Position on landscape: Lower inset fans and fan skirts
Parent material: Loess capped mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, small rabbitbrush

Typical Profile

0 to 11 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

11 to 60 inches or more—stratified loam to gravelly loamy sand; 5 to 40 percent pebbles (by weight); massive; hard, friable; very strongly alkaline (pH 9.2); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Irregularly shaped inset fans on upper part of map unit
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Inclusion 2
Position on landscape: Convex, dissected, highest summits of fan piedmont remnants
Contrasting features: Indurated duripan within a depth of 20 inches
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Areas adjacent to concave, active channels
Contrasting features: Droughty soil subject to occasional flash flooding
Distinctive present vegetation: Basin big sagebrush, Wyoming big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Jenor soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Broyles soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Jenor Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Beoska Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Broyles Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Jenor soil—IVe, irrigated, and VIIs, nonirrigated; Beoska soil—IIIe, irrigated, and VIIs, nonirrigated; Broyles soil—IIIe, irrigated, and VIIc, nonirrigated
Range site: Jenor soil—024X002N; Beoska soil—024X002N; Broyles soil—024X002N

590—Landco silt loam

Map Unit Setting

Position on landscape: Alluvial flat remnants
Elevation: 4,400 to 4,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Landco silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty over clayey, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed, (calcareous), mesic—5 percent
• Inclusion 2: Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Rosney silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Landco Soil

Position on landscape: Alluvial flat remnants
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, Nuttall saltbush, seepweed

Typical Profile

0 to 18 inches—silt loam; prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4

18 to 44 inches—silty clay, silty clay loam; prismatic structure; very hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CH, CL; estimated AASHTO classification—A-7

44 to 69 inches or more—silt loam; massive; slightly hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.64; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flat remnants near adjacent alluvial flats
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Black greasewood, shadscale

Inclusion 2
Position on landscape: Higher areas on alluvial flat remnants near adjacent skirts
Contrasting features: Sandy loam throughout the profile
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 3
Position on landscape: Outer margins of alluvial flat remnants
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Nuttall saltbush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland
Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—hard to pack
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt
Drainage: Deep to water
Irrigation: Excess salt, percs slowly, erodes easily
Terraces and diversions: Erodes easily, percs slowly

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 024X012N

602—Misad gravelly sandy loam, strongly saline-sodic

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,500 to 4,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Misad gravelly sandy loam, strongly saline-sodic, 0 to 2 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—90 percent

Contrasting inclusions:
• Inclusion 1: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent

Characteristics of the Misad Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, black greasewood

Typical Profile

0 to 7 inches—gravelly sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM, SM-SC; estimated AASHTO classification—A-1, A-2
7 to 31 inches—stratified fine sandy loam to very gravelly sandy loam; 5 to 10 percent cobbles and stones and 40 to 60 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GM, GM-GC, SM, SM-SC; estimated AASHTO classification—A-1, A-2
31 to 60 inches or more—stratified very gravelly loamy sand to extremely gravelly coarse sand; 5 to 10 percent cobbles and stones and 60 to 80 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 2.9 to 4.1 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent alluvial flat remnants
Contrasting features: Silty throughout the profile, moderately well drained
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 2
Position on landscape: Lower margins of fan skirts
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Shadscale, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, small stones, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Drainage: Deep to water
Irrigation: Droughty
Terraces and diversions: Too sandy

Interpretive Groups

Capability classification: VIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

605—Misad-Creemon-Rednik association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Misad gravelly loam, 4 to 8 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—35 percent
• Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—30 percent
• Rednik silt loam, 4 to 8 percent slopes—Typic Haplargids, loamy-skeletal, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 4 to 8 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—10 percent
• Inclusion 2: Whirlo very gravelly loam, 4 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Misad Soil

Position on landscape: Fan aprons overplacing fan piedmonts
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, cheatgrass

Typical Profile

0 to 7 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, SM-SC, GM, GM-GC; estimated AASHTO classification—A-2, A-4

7 to 31 inches—stratified fine sandy loam to very gravelly sandy loam; 5 to 10 percent cobbles and stones and 40 to 60 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM, GM-GC, SM, SM-SC; estimated AASHTO classification—A-1, A-2

31 to 60 inches or more—very gravelly loamy sand to extremely gravelly coarse sandy loam; 5 to 10 percent cobbles and stones and 60 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 2.9 to 4.1 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Creemon Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 10 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4

10 to 15 inches—very fine sandy loam, silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

15 to 45 inches—stratified very fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

45 to 60 inches or more—stratified gravelly very fine sandy loam to fine sandy loam; 15 to 30 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.7 to 11.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Rednik Soil

Position on landscape: Nonburied fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 6 inches—silt loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

6 to 17 inches—very gravelly sandy loam, extremely gravelly loam, very gravelly sandy clay loam; 5 to 30 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; hard, friable; strongly alkaline (pH 8.9); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2

17 to 60 inches or more—very gravelly sandy loam, very gravelly sand, extremely gravelly loamy sand; 5 to 30 percent cobbles and stones and 50 to 70 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 9.0); nonsaline to slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 17 inches—moderately slow; below this depth—very rapid
Available water capacity: 2.6 to 4.1 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Higher, nonburied fan piedmont remnants and fan drainageways
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Inclusion 2
Position on landscape: Upper margins of fan skirts
Contrasting features: Very gravelly fine sandy loam substratum, noncalcareous surface and subsoil layers
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Misad soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Creemon soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Rednik soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Misad Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—seepage, small stones, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Creemon Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight

Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt

Ratings of the Rednik Soil for Selected Uses

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones
Roadfill: Fair—large stones
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Misad soil—IIIs, irrigated, and VIIs, nonirrigated; Creemon soil—IIc, irrigated, and VIIc, nonirrigated; Rednik soil—VIIs, nonirrigated
Range site: Misad soil—024X002N; Creemon soil—024X002N; Rednik soil—024X002N

631—McConnel-Tulase association

Map Unit Setting

Position on landscape: Beach plains
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 105 days

Composition

Major components:
• McConnel loam, 0 to 4 percent slopes—Xerollic Camborthids, sandy-skeletal, mixed, mesic—60 percent
• Tulase silt loam, 0 to 2 percent slopes—Durorthidic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Xeric Torriorthents, 0 to 2 percent slopes—Durorthidic Xeric Torriorthents, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 2: Durixerollic Camborthids, 0 to 4 percent slopes—Durixerollic Camborthids, coarse-silty, mixed, mesic—3 percent
• Inclusion 3: Bubus very fine sandy loam, 0 to 4 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent

Characteristics of the McConnel Soil

Position on landscape: Offshore bars
Parent material: Mixed alluvium influenced by loess and volcanic ash over beach deposits
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, pine bluegrass, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 2 inches—loam; 5 to 15 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
2 to 12 inches—loam, sandy loam, fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
12 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sand; 0 to 15 percent cobbles and stones and 65 to 90 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GP; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 12 inches—moderately rapid; below this depth—very rapid
Available water capacity: 3.1 to 4.4 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.37; T value—2; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Tulase Soil

Position on landscape: Lagoons

Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—slightly concave to slightly convex
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, pine bluegrass, bottlebrush squirreltail, Indian ricegrass

Typical Profile

0 to 6 inches—silt loam; platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
6 to 60 inches or more—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.1 to 12.5 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth to slightly concave inset fans dissecting beach plains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye
Inclusion 2
Position on landscape: Smooth to slightly convex fan skirts at upper margin of beach plains
Contrasting features: Noncalcareous in the upper 20 inches
Distinctive present vegetation: Basin big sagebrush, black greasewood, basin wildrye
Inclusion 3
Position on landscape: Adjacent smooth to slightly convex alluvial flat remnants
Contrasting features: Loamy throughout the profile
Distinctive present vegetation: Black greasewood, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the McConnel soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Tulase soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the McConnel Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—too sandy, small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Tulase Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: McConnel soil—IVe, irrigated, and VIIs, nonirrigated; Tulase soil—IIe, irrigated, and VIc, nonirrigated
Range site: McConnel soil—024X005N; Tulase soil—024X005N

660—Needle Peak silt loam, occasionally flooded

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,700 to 4,800 feet

Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Needle Peak silt loam, 0 to 2 percent slopes, occasionally flooded—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 0 to 2 percent slopes—Xeric Torriorthents, fine-loamy, mixed (calcareous), mesic—7 percent
• Inclusion 2: Durorthidic Torriorthents, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Broyles silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—3 percent

Characteristics of the Needle Peak Soil

Position on landscape: Flood plains
Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—smooth to slightly concave
Dominant present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye, bottlebrush squirreltail, inland saltgrass

Typical Profile

0 to 4 inches—silt loam; platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7
4 to 60 inches or more—silt loam, silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: January through May—48 to 72 inches; rest of year—below 72 inches
Flooding: Frequency—occasional; duration—brief; months—March through June
Permeability: Moderately slow
Available water capacity: 11.4 to 13.2 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Stream terraces
Contrasting features: Moderately well drained
Distinctive present vegetation: Basin big sagebrush, basin wildrye
Inclusion 2
Position on landscape: Outer margin of flood plains adjacent to fan skirts
Contrasting features: Strongly salt and sodium affected throughout the profile
Distinctive present vegetation: Shadscale
Inclusion 3
Position on landscape: Fan skirts adjacent to flood plains
Contrasting features: Nonflooded, well drained, and slightly salt and sodium affected
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—fair; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Fair—too arid
Daily cover for landfill: Fair—too clayey
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Slight
Embankments, dikes, and levees: Moderate—piping
Drainage: Deep to water
Irrigation: Erodes easily, flooding
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIw, irrigated, and VIw, nonirrigated
Range site: 024X006N

670—Filiran-Pineval-Kingingham association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,600 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Filiran silt loam, 2 to 4 percent slopes—Haploxerollic Nadurargids, fine, montmorillonitic, mesic—40 percent
• Pineval gravelly fine sandy loam, 4 to 8 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—30 percent
• Kingingham gravelly very fine sandy loam, 2 to 4 percent slopes—Typic Nadurargids, fine, montmorillonitic, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Haplargids, 4 to 15 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—8 percent
• Inclusion 2: Durixerollic Camborthids, 2 to 4 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—7 percent

Characteristics of the Filiran Soil

Position on landscape: Summits of upper fan piedmont remnants
Parent material: Kind—alluvium influenced by loess; source—metavolcanic rocks
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—silt loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
7 to 12 inches—gravelly silt loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM-GC, GC, SC, SM-SC; estimated AASHTO classification—A-4, A-6
12 to 33 inches—clay, silty clay loam, gravelly clay; 10 to 30 percent pebbles (by weight); prismatic structure; very hard, very firm; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
33 to 60 inches or more—strongly cemented duripan

Soil and Water Features

Depth to hardpan: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.7 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.49; T value—2; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Pineval Soil

Position on landscape: Fan aprons
Parent material: Gravelly mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, Sandberg bluegrass

Typical Profile

0 to 5 inches—gravelly fine sandy loam; 25 to 40 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2
5 to 11 inches—very gravelly loam, very gravelly clay loam; 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-2
11 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly sand; 0 to 25 percent cobbles and stones and 50 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/

cm); nonsodic (SAR less than 4); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.0 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Kingingham Soil

Position on landscape: Summits of lower fan piedmont remnants
Parent material: Mixed alluvium with a thin loess mantle
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
7 to 22 inches—gravelly clay loam, gravelly clay, gravelly silty clay loam; 0 to 5 percent cobbles and stones and 30 to 40 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 13 to 30); estimated Unified classification—CL, CH, GC; estimated AASHTO classification—A-7
22 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 3.5 to 4.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Side slopes of fan piedmont remnants
Contrasting features: Clay loam subsoil
Distinctive present vegetation: Wyoming big sagebrush, Sandberg bluegrass
Inclusion 2
Position on landscape: Broad inset fans
Contrasting features: Loamy throughout the profile
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Filiran soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Pineval soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Kingingham soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Filiran Soil for Selected Uses
Range seeding: Poor—excess sodium
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—low strength, shrink-swell, cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, too clayey
Pond reservoir areas: Moderate—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer, excess sodium

Ratings of the Pineval Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action

Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—area reclaim, small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage

Ratings of the Kingingham Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess salt
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—cemented pan, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, too clayey
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer, excess sodium

Interpretive Groups

Capability classification: Filiran soil—VIIs, nonirrigated; Pineval soil—IVe, irrigated, and VIs, nonirrigated; Kingingham soil—VIIs, nonirrigated
Range site: Filiran soil—028B010N; Pineval soil—028B010N; Kingingham soil—024X002N

680—Skullwak-Umberland-Wendane association

Map Unit Setting

Position on landscape: Basin floor
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Skullwak silt loam, 0 to 2 percent slopes, frequently flooded—Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic—35 percent
• Umberland silt loam, 0 to 2 percent slopes, occasionally flooded—Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic—35 percent
• Wendane silt loam, 0 to 2 percent slopes, frequently flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Playas—7 percent
• Inclusion 2: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Dune land, clayey—3 percent

Characteristics of the Skullwak Soil

Position on landscape: Lake plains
Parent material: Fine textured mixed lacustrine sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Inland saltgrass, alkali bluegrass, alkali rabbitbrush

Typical Profile

0 to 10 inches—silt loam; platy structure; hard, friable; strongly alkaline (pH 8.8); strongly saline (16 to 40 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
10 to 60 inches or more—stratified silty clay loam to silt loam; massive; very hard, very firm; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

Soil and Water Features

Depth to seasonal high water table: January through December—18 to 36 inches
Flooding: Frequency—frequent; duration—brief; months—December through June
Permeability: Very slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 9 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: Moderate

Characteristics of the Umberland Soil

Position on landscape: Lake plains with coppice dunes adjacent to playas
Parent material: Mixed lacustrine sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, inland saltgrass

Typical Profile

0 to 4 inches—silt loam; platy structure; hard, friable; strongly alkaline (pH 9.0); strongly saline (40 to 60

mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4

4 to 60 inches—silty clay, silty clay loam; massive; slightly hard, friable; strongly alkaline (pH 9.2); strongly saline (20 to 40 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

Soil and Water Features

Depth to seasonal high water table: December through June—30 to 60 inches; rest of year—below 60 inches
Flooding: Frequency—occasional; duration—long; months—December through June
Permeability: Very slow
Available water capacity: 9.0 to 12.5 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Characteristics of the Wendane Soil

Position on landscape: Alluvial flats
Parent material: Mixed silty alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye, inland saltgrass

Typical Profile

0 to 13 inches—silt loam; platy structure; slightly hard, very friable; very strongly alkaline (pH 9.6); strongly saline (30 to 50 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4

13 to 27 inches—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

27 to 60 inches or more—stratified silt loam to clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); slightly to moderately sodic (SAR 20 to 35); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through May—30 to 48 inches; rest of year—below 48 inches
Flooding: Frequency—frequent; duration—brief or long; months—December through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Irregularly shaped sink areas and extensions of main playas
Contrasting features: Ponded
Distinctive present vegetation: Barren

Inclusion 2
Position on landscape: Remnants of lake plains
Contrasting features: Moderately well drained due to channeling
Distinctive present vegetation: Black greasewood, shadscale, bud sagebrush

Inclusion 3
Position on landscape: Convex parna dunes adjacent to playas
Contrasting features: Dune topography, excessively drained, and nonflooded
Distinctive present vegetation: Barren except for some scattered black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Skullwak soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—fair
Suitability of the Umberland soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—fair
Suitability of the Wendane soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—fair

Ratings of the Skullwak Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, hard to pack
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, shrink-swell
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness, excess salt, excess sodium

Ratings of the Umberland Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, hard to pack, excess sodium
Shallow excavations: Moderate—too clayey, flooding, wetness
Local roads and streets: Severe—low strength, shrink-swell, flooding
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Wendane Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—flooding, wetness
Local roads and streets: Severe—flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Interpretive Groups

Capability classification: Skullwak soil—VIIw, nonirrigated; Umberland soil—VIIw, nonirrigated; Wendane soil—VIIw, nonirrigated
Range site: Skullwak soil—024X044N; Umberland soil—024X011N; Wendane soil—024X007N

684—Ocala silt loam, occasionally flooded

Map Unit Setting

Position on landscape: Lake plains
Elevation: 5,000 to 5,300 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Ocala silt loam, 0 to 2 percent slopes, occasionally flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Torriorthents, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Durixerollic Camborthids, 0 to 2 percent slopes—Durixerollic Camborthids, fine-silty, mixed, mesic—3 percent
• Inclusion 3: Aeric Halaquepts, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—2 percent

Characteristics of the Ocala Soil

Position on landscape: Lake plains
Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Black greasewood, rubber rabbitbrush, inland saltgrass, basin wildrye

Typical Profile

0 to 13 inches—silt loam; platy structure; slightly hard, friable; very strongly alkaline (pH 9.2); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML, CL; estimated AASHTO classification—A-4, A-6
13 to 60 inches or more—silt loam, silty clay loam; massive; hard, firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 20 to 35); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through May—42 to 60 inches; rest of year—below 60 inches
Flooding: Frequency—occasional; duration—brief or long; months—March through May
Permeability: Slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L

Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave margins of alluvial flat remnants adjacent to lake plains
Contrasting features: Moderately well drained
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 2
Position on landscape: Fan skirts adjacent to lake plains
Contrasting features: Well drained
Distinctive present vegetation: Basin big sagebrush, black greasewood, basin wildrye
Inclusion 3
Position on landscape: Lower areas of lake plains
Contrasting features: Ponded for brief periods
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—fair

Ratings for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: VIIw, nonirrigated
Range site: 024X007N

700—Orovada fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 5,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Orovada fine sandy loam, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 2: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—4 percent
• Inclusion 3: Davey fine sandy loam, 0 to 2 percent slopes—Xerollic Camborthids, sandy, mixed, mesic—4 percent
• Inclusion 4: Goldrun fine sand, 0 to 4 percent slopes—Xeric Torripsamments, mixed, mesic—3 percent

Characteristics of the Orovada Soil

Position on landscape: Fan skirts
Parent material: Loess high in volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); prismatic structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate

Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower margins of fan skirts
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Adjacent inset fans
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Sand sheets overplacing fan skirts
Contrasting features: Sandy at a depth of more than 20 inches
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 4
Position on landscape: Sand dunes on fan skirts
Contrasting features: Sandy throughout the profile
Distinctive present vegetation: Indian ricegrass, Wyoming big sagebrush
Other inclusions of minor extent
Position on landscape: Adjacent fan piedmont remnants
Contrasting features: Duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Shadscale and bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing, erodes easily
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups

Capability classification: IIc, irrigated, and VIc, nonirrigated
Range site: 024X020N

701—Orovada fine sandy loam, 2 to 4 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,800 to 5,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Orovada fine sandy loam, 2 to 4 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Davey fine sandy loam, 2 to 4 percent slopes—Xerollic Camborthids, sandy, mixed, mesic—5 percent
• Inclusion 2: Creemon silt loam, 2 to 4 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 3: Broyles very fine sandy loam, 2 to 4 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Orovada Soil

Position on landscape: Slightly dissected fan skirts
Parent material: Loess high in volcanic ash over mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail, spiny hopsage

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles

(by weight); prismatic structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4

8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

20 to 65 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex to slightly concave, slightly dissected sand sheets overplacing fan skirts
Contrasting features: Sandy throughout the profile
Distinctive present vegetation: Indian ricegrass, Wyoming big sagebrush

Inclusion 2
Position on landscape: Smooth, slightly dissected inset fans dissecting fan skirts
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Higher dissected fan skirts
Contrasting features: Slightly sodium affected
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing, slope, erodes easily
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups

Capability classification: IIe, irrigated, and VIc, nonirrigated
Range site: 024X020N

702—Orovada fine sandy loam, cemented substratum, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,500 to 4,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Orovada fine sandy loam, cemented substratum, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Blacka very fine sandy loam, 0 to 2 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 2: Broyles very fine sandy loam, 0 to 2

percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 3: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—4 percent
• Inclusion 4: Davey fine sandy loam, 0 to 2 percent slopes—Xerollic Camborthids, sandy, mixed, mesic—3 percent

Characteristics of the Orovada Soil

Position on landscape: Fan skirts
Parent material: Loess high in volcanic ash over mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Douglas rabbitbrush, globemallow

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
8 to 20 inches—loam, fine sandy loam; 5 to 20 percent pebbles (by weight); subangular blocky structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
20 to 45 inches or more—stratified fine sandy loam to silt loam; 5 to 20 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM; estimated AASHTO classification—A-4
45 to 60 inches or more—strongly cemented duripan

Soil and Water Features

Depth to hardpan: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent fan piedmont remnants
Contrasting features: Strongly cemented duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Shadscale
Inclusion 2
Position on landscape: Lower areas on fan skirts
Contrasting features: Lacks cemented substratum
Distinctive present vegetation: Shadscale
Inclusion 3
Position on landscape: Adjacent inset fans
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Shadscale
Inclusion 4
Position on landscape: Sand sheets overplacing fan skirts
Contrasting features: Sandy throughout the profile
Distinctive present vegetation: Wyoming big sagebrush, Indian ricegrass
Other inclusions of minor extent
Position on landscape: Adjacent fan piedmont remnants
Contrasting features: Indurated duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Shadscale and bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:

Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Fair—too arid
Daily cover for landfill: Fair—cemented pan, thin layer
Shallow excavations: Moderate—cemented pan
Local roads and streets: Moderate—frost action
Roadfill: Fair—thin layer, cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage, cemented pan
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water

Irrigation: Soil blowing, erodes easily
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups

Capability classification: IIc, irrigated, and VIc, nonirrigated
Range site: 024X020N

703—Orovada-Goldrun complex

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,500 to 5,300 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Orovada fine sandy loam, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—45 percent
• Goldrun fine sand, 0 to 4 percent slopes—Xeric Torripsamments, mixed, mesic—45 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Davey very fine sandy loam, 0 to 2 percent slopes—Xerollic Camborthids, sandy, mixed, mesic—5 percent

Characteristics of the Orovada Soil

Position on landscape: Fan skirts
Parent material: Loess high in volcanic ash over mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Thurber needlegrass, spiny hopsage, Wyoming big sagebrush

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); prismatic structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Goldrun Soil

Position on landscape: Sand sheets on fan skirts
Parent material: Mixed alluvium influenced by volcanic ash
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Indian ricegrass, needleandthread, basin big sagebrush

Typical Profile

0 to 7 inches—fine sand; massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2
7 to 60 inches or more—fine sand; massive; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Rapid
Available water capacity: 4.2 to 5.4 inches
Water-supplying capacity: 9 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower margins of fan skirts
Contrasting features: Moderately saline profile
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Lower margins of sand sheets
Contrasting features: Loamy over sandy profile

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability of the Orovada soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—poor; shallow water areas—very poor
Suitability of the Goldrun soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—very poor; shallow water areas—very poor

Ratings and Restrictive Features of the Orovada Soil for Selected Uses and Practices
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing, erodes easily
Terraces and diversions: Erodes easily, soil blowing

Ratings and Restrictive Features of the Goldrun Soil for Selected Uses and Practices
Range seeding: Poor—soil blowing, too sandy
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, seepage
Drainage: Deep to water
Irrigation: Droughty, fast intake, soil blowing
Terraces and diversions: Too sandy, soil blowing

Interpretive Groups

Capability classification: Orovada soil—IIc, irrigated, and VIc, nonirrigated; Goldrun soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Orovada soil—024X020N; Goldrun soil—024X001N

704—Orovada-Kodra-Puett association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Orovada loam, 8 to 15 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—40 percent
• Kodra silt loam, 8 to 15 percent slopes—Haploxerollic Durorthids, coarse-loamy, mixed, mesic—30 percent
• Puett gravelly sandy loam, 15 to 30 percent slopes, very stony—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—7 percent
• Inclusion 2: Xeric Torriorthents, 2 to 8 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—3 percent

Characteristics of the Orovada Soil

Position on landscape: Fan skirts
Parent material: Loess high in volcanic ash over mixed alluvium
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Thurber needlegrass, Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 8 inches—loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than

2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.5 to 9.7 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Kodra Soil

Position on landscape: Upper summits and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—convex
Dominant present vegetation: Thurber needlegrass, Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 4 inches—silt loam; 0 to 25 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4

4 to 30 inches—loam, sandy loam; 0 to 25 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4, A-2

30 to 51 inches or more—strongly cemented duripan; massive; extremely hard, very firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 4.1 to 5.3 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Puett Soil

Position on landscape: Side slopes of fan piedmont remnants near locally exposed soft bedrock core
Parent material: Kind—residuum; source—soft tuffaceous rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Indian ricegrass, black sagebrush, Wyoming big sagebrush
Rock fragments on surface: Kind—stones; percentage of surface covered—2

Typical Profile

0 to 4 inches—gravelly sandy loam; 5 to 10 percent cobbles and stones and 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4

4 to 15 inches—coarse sandy loam, gravelly sandy loam, loam; 10 to 50 percent pebbles (by weight); massive; soft, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML, GM; estimated AASHTO classification—A-1, A-2, A-4

15 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1.7 to 2.1 inches
Water-supplying capacity: 7 inches

Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—4
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Eroded side slopes of fan piedmont remnants with a locally exposed bedrock core
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Inset fans and channels
Contrasting features: Very gravelly substratum
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Kodra soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Puett soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid, erodes easily
Daily cover for landfill: Fair—slope
Shallow excavations: Moderate—slope
Local roads and streets: Moderate—frost action, slope
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, slope, thin layer
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Kodra Soil for Selected Uses
Range seeding: Fair—too arid, erodes easily
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan, frost action, slope
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—cemented pan, small stones, thin layer
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Puett Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—seepage, piping

Interpretive Groups

Capability classification: Orovada soil—IVe, irrigated, and VIc, nonirrigated; Kodra soil—IVe, irrigated, and VIs, nonirrigated; Puett soil—VIIe, nonirrigated
Range site: Orovada soil—024X005N; Kodra soil—024X005N; Puett soil—025X025N

705—Orovada-Creemon complex

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,600 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Orovada fine sandy loam, 2 to 8 percent slopes, eroded—Durixerollic Camborthids, coarse-loamy, mixed, mesic—45 percent
• Creemon silt loam, 2 to 8 percent slopes, eroded—Duric Camborthids, coarse-silty, mixed, mesic—45 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Davey fine sandy loam, 2 to 4 percent slopes—Xerollic Camborthids, sandy, mixed, mesic—5 percent

Characteristics of the Orovada Soil

Position on landscape: Upper fan skirts
Parent material: Loess high in volcanic ash over mixed alluvium
Slope features: Length—short; shape—concave

Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass, Indian ricegrass

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4

8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Creemon Soil

Position on landscape: Lower fan skirts
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass

Typical Profile

0 to 10 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4

10 to 15 inches—very fine sandy loam, silt loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

15 to 45 inches—stratified very fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4

45 to 60 inches or more—stratified gravelly very fine sandy loam to fine sandy loam; 15 to 30 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.7 to 11.6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth to convex higher areas of fan skirts
Contrasting features: Fine sandy loam subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Smooth to concave sand sheets overplacing parts of fan skirts
Contrasting features: Sandy substratum
Distinctive present vegetation: Indian ricegrass, needleandthread, big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability of the Orovada soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses

and legumes (irrigated)—fair; wild herbaceous plants—fair; shrubs (nonirrigated)—fair; wetland plants—poor; shallow water areas—very poor
Suitability of the Creemon soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features of the Orovada Soil for Selected Uses and Practices
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing, slope, erodes easily
Terraces and diversions: Erodes easily, soil blowing

Ratings and Restrictive Features of the Creemon Soil for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Slope, erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Orovada soil—IIIe, irrigated, and VIc, nonirrigated; Creemon soil—IIIe, irrigated, and VIIc, nonirrigated
Range site: Orovada soil—024X020N; Creemon soil—024X002N

706—Orovada-Wieland-Chiara association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Orovada fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—45 percent
• Wieland gravelly loam, 2 to 8 percent slopes—Durixerollic Haplargids, fine, montmorillonitic, mesic—25 percent
• Chiara fine sandy loam, 2 to 8 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—15 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids, 2 to 4 percent slopes—Durixerollic Camborthids, coarse-silty, mixed, mesic—8 percent
• Inclusion 2: Aridic Haploxerolls, 2 to 4 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Xeric Torriorthents, 2 to 4 percent slopes—Xeric Torriorthents, sandy-skeletal, mixed, mesic—2 percent

Characteristics of the Orovada Soil

Position on landscape: Broad inset fans
Parent material: Loess high in volcanic ash over mixed alluvium
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, bluegrass, Indian ricegrass

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Wieland Soil

Position on landscape: Summits and shoulder slopes of upper fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth to convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

0 to 5 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL, SC; estimated AASHTO classification—A-6
5 to 26 inches—gravelly clay, clay; 0 to 5 percent cobbles and stones and 10 to 45 percent pebbles (by weight); prismatic structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CH, SC; estimated AASHTO classification—A-7
26 to 52 inches—gravelly sandy clay loam, gravelly clay loam; 0 to 5 percent cobbles and stones and 30 to 50 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.5); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
52 to 60 inches or more—loam, gravelly loam, gravelly sandy loam; 0 to 5 percent cobbles and stones and 10 to 45 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 5.7 to 9.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Chiara Soil

Position on landscape: Summits of lower fan piedmont remnants
Parent material: Loess mantle high in volcanic ash over mixed alluvium
Slope features: Length—short; smooth to slightly convex
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, pine bluegrass, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 5 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4
5 to 16 inches—very fine sandy loam, silt loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
16 inches—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.4 to 2.8 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth to slightly convex fan skirts adjacent to fan piedmonts
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Smooth to slightly concave higher parts of inset fans
Contrasting features: Very deep, very gravelly
Distinctive present vegetation: Basin big sagebrush, basin wildrye
Inclusion 3
Position on landscape: Adjacent to concave channels
Contrasting features: Very gravelly sand throughout the profile
Distinctive present vegetation: Basin big sagebrush, rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Wieland soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Chiara soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Wieland Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Moderate—thin layer

Ratings of the Chiara Soil for Selected Uses
Range seeding: Fair—droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—frost action, piping, thin layer

Interpretive Groups

Capability classification: Orovada soil—IIIe, irrigated, and VIc, nonirrigated; Wieland soil—IIIe, irrigated, and VIs, nonirrigated; Chiara soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Orovada soil—024X005N; Wieland soil—024X005N; Chiara soil—024X005N

707—Orovada-Goldrun association

Map Unit Setting

Position on landscape: Interhill alluvial fans
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Orovada fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—70 percent
• Goldrun fine sand, 4 to 15 percent slopes—Xeric Torripsamments, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, fine-loamy, mixed, mesic—5 percent
• Inclusion 2: Durixerollic Camborthids, stony very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 3: Rock outcrop—1 percent

Characteristics of the Orovada Soil

Position on landscape: Alluvial fans
Parent material: Loess high in volcanic ash over mixed alluvium

Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Thurber needlegrass, Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); prismatic structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Goldrun Soil

Position on landscape: Sand sheets overplacing alluvial fans
Parent material: Mixed eolian sands influenced by volcanic ash
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Indian ricegrass, basin big sagebrush, needleandthread

Typical Profile

0 to 7 inches—fine sand; massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2
7 to 60 inches or more—fine sand; massive; slightly hard, very friable; moderately alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Rapid
Available water capacity: 4.2 to 5.4 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: A
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial fan remnants
Contrasting features: Clay loam subsoil
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Upper margins of alluvial fans
Contrasting features: Stony surface layer
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass
Inclusion 3
Position on landscape: Nonburied, scattered bedrock outcroppings of hills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Goldrun soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight

Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Goldrun Soil for Selected Uses
Range seeding: Poor—soil blowing, too sandy
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—slope
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—piping, seepage

Interpretive Groups

Capability classification: Orovada soil—IIIe, irrigated, and VIc, nonirrigated; Goldrun soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Orovada soil—024X005N; Goldrun soil—024X001N

708—Orovada-Reina-Rock outcrop association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Orovada fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—45 percent
• Reina loam, 15 to 30 percent slopes—Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic, shallow—25 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 15 to 50 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 2: Xerollic Camborthids, 30 to 50 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Orovada Soil

Position on landscape: Inset fans between foothills
Parent material: Loess high in volcanic ash over mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, spiny hopsage

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Reina Soil

Position on landscape: East-, west-, and south-facing side slopes of foothills
Parent material: Kind—residuum; source—andesite, basalt, tuffs, and quartzite
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, spiny hopsage, Thurber needlegrass

Typical Profile

0 to 7 inches—loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4

7 to 18 inches—very gravelly clay, very gravelly clay loam; 10 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); prismatic structure; very hard, firm; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM; estimated AASHTO classification—A-2, A-7

18 to 26 inches—indurated duripan; massive; very hard, very firm

26 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 22 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.0 to 2.6 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of Rock Outcrop

Position on landscape: Rimrock and eroded side slopes of foothills
Slope features: Length—short; concave to convex
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Colluvial foot slopes of foothills
Contrasting features: Deep, very gravelly
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: North-facing side slopes of foothills
Contrasting features: Moderately deep to bedrock
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reina soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Reina Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—slope, depth to bedrock, small stones
Shallow excavations: Severe—cemented pan, depth to bedrock, slope
Local roads and streets: Cemented pan, slope
Roadfill: Poor—cemented pan, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, slope
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Orovada soil—IIIe, irrigated, and VIc, nonirrigated; Reina soil—IVe, irrigated, and VIIe, nonirrigated
Range site: Orovada soil—024X020N; Reina soil—024X005N

709—Orovada-Sodhouse association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Orovada fine sandy loam, 8 to 15 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—50 percent
• Sodhouse stony very fine sandy loam, 8 to 15 percent slopes—Typic Durorthids, loamy, mixed, mesic, shallow—40 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Durorthids, 8 to 15 percent slopes—Xerollic Durorthids, coarse-loamy, mixed, mesic—10 percent

Characteristics of the Orovada Soil

Position on landscape: Fan skirts
Parent material: Loess high in volcanic ash over mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, basin wildrye, bottlebrush squirreltail

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); prismatic structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Sodhouse Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Surface cover: 2 percent stones

Typical Profile

0 to 10 inches—stony very fine sandy loam; 5 to 15 percent cobbles and stones and 10 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML, GM, SM; estimated AASHTO classification—A-4
10 to 17 inches—fine sandy loam, loam, very fine sandy loam; 10 to 25 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
17 to 29 inches—indurated duripan; massive
29 to 60 inches or more—extremely gravelly sandy loam, very gravelly loamy sand; 5 to 20 percent cobbles and stones and 50 to 85 percent pebbles (by weight); massive; very hard, firm; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.1 to 2.6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.49; T value—1; wind erodibility group—4
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: On-fan drainageways of fan piedmont remnants
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Sodhouse soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Fair—slope
Shallow excavations: Moderate—slope
Local roads and streets: Moderate—frost action, slope
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, slope, thin layer
Pond reservoir areas: Slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Sodhouse Soil for Selected Uses
Range seeding: Poor—too arid, droughty
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—slope, cemented pan, seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Orovada soil—IVe, irrigated, and VIc, nonirrigated; Sodhouse soil—VIIs, nonirrigated
Range site: Orovada soil—024X020N; Sodhouse soil—024X002N

711—Paranat silty clay loam

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Paranat silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Humboldt silty clay loam, moderately saline, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine, montmorillonitic (calcareous), mesic—5 percent
• Inclusion 2: Rose Creek silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Sonoma silty clay loam, 0 to 2 percent slopes, frequently flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Paranat Soil

Position on landscape: Flood plains
Parent material: Silty mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Spikerush, sedge, rush, curly dock, creeping wildrye, inland saltgrass

Typical Profile

0 to 20 inches—silty clay loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.5); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-6, A-7
20 to 48 inches—stratified silty clay loam to silt loam; prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-6
48 to 60 inches or more—stratified very fine sandy loam to silty clay; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: November through

June—18 to 42 inches; rest of year—below 42 inches
Flooding: Frequency—frequent; duration—brief or long; months—December through June
Permeability: Moderately slow
Available water capacity: 11.5 to 13.0 inches
Water-supplying capacity: 12 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Depressions and backwater channels on flood plains
Contrasting features: Clayey throughout the profile
Distinctive present vegetation: Silver sagebrush
Inclusion 2
Position on landscape: Small irregularly shaped areas adjacent to channels
Contrasting features: Lower water table during spring
Distinctive present vegetation: Sedges
Inclusion 3
Position on landscape: Small irregularly shaped areas on flood plains along the outer margin of the delineation
Contrasting features: Less organic matter in the surface layer
Distinctive present vegetation: Sedge, rose

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—very poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—good; shallow water areas—good

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Fair—excess salt
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, wetness
Drainage: Flooding, frost action
Irrigation: Wetness, erodes easily, flooding
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: Vw, irrigated, and Vw, nonirrigated
Range site: 025X001N

713—Paranat silty clay loam, drained

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Paranat silty clay loam, drained, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Sonoma silty clay loam, drained, 0 to 2 percent slopes, occasionally flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—10 percent
• Inclusion 2: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Paranat Soil

Position on landscape: Deeply incised and channeled flood plain remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Basin wildrye, alkali sacaton, black greasewood

Typical Profile

0 to 20 inches—silty clay loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); slightly to moderately sodic (SAR 15 to 30); estimated Unified classification—ML; estimated AASHTO classification—A-6, A-7
20 to 60 inches or more—silty clay loam, silt loam;

massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: February through May—60 to 72 inches; rest of year—below 72 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.5 to 13.0 inches
Water-supplying capacity: 12 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Outer margins of flood plain remnants
Contrasting features: Occasionally flooded
Distinctive present vegetation: Black greasewood, basin wildrye
Inclusion 2
Position on landscape: Alluvial flat remnants adjacent to flood plains
Contrasting features: Strongly sodic upper soil profile
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland
Potential uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X007N

714—Paranat silty clay loam, occasionally flooded

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Paranat silty clay loam, 0 to 2 percent slopes, occasionally flooded—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Rixie silty clay loam, 0 to 2 percent slopes—Aquic Duric Haploxerolls, fine-loamy, mixed, mesic—10 percent
• Inclusion 2: Sonoma silty clay loam, 0 to 2 percent slopes, occasionally flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Paranat Soil

Position on landscape: Flood plains
Parent material: Silty mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, silver sagebrush, creeping wildrye, inland saltgrass, alkali sacaton, basin wildrye

Typical Profile

0 to 20 inches—silty clay loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.5); nonsaline (less than 4 mmhos/cm);

nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-6, A-7

20 to 48 inches—stratified silty clay loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-6

48 to 60 inches or more—stratified very fine sandy loam to silty clay; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: November through July—18 to 42 inches; rest of year—below 42 inches

Flooding: Frequency—occasional; duration—brief or long; months—December through May

Permeability: Moderately slow

Available water capacity: 11.5 to 13.0 inches

Water-supplying capacity: 12 inches

Runoff: Very slow

Hydrologic group: C

Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low

Potential frost action: High

Contrasting Inclusions

Inclusion 1

Position on landscape: Adjacent to backwater channels

Contrasting features: Frequently flooded for short periods in early spring

Distinctive present vegetation: Sedges

Inclusion 2

Position on landscape: Small higher areas of flood plains

Contrasting features: Less organic matter in the surface layer

Distinctive present vegetation: Alkali cordgrass

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:

Suitability for named elements: Grain and seed crops (irrigated)—very poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—good; shallow water areas—good

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Fair—excess salt

Daily cover for landfill: Fair—too clayey, wetness

Shallow excavations: Severe—wetness

Local roads and streets: Severe—low strength, flooding, frost action

Roadfill: Poor—low strength

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Fair—too clayey

Pond reservoir areas: Slight

Embankments, dikes, and levees: Severe—piping, wetness

Drainage: Flooding, frost action

Irrigation: Wetness, erodes easily, flooding

Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: Vw, irrigated, and Vw, nonirrigated

Range site: 024X007N

731—Yipor silt loam, moderately saline-sodic

Map Unit Setting

Position on landscape: Fan skirts

Elevation: 4,600 to 4,800 feet

Average annual precipitation: About 7 inches

Average annual air temperature: About 48 degrees F

Frost-free season: About 110 days

Composition

Major components:

• Yipor silt loam, moderately saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—90 percent

Contrasting inclusions:

• Inclusion 1: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent

• Inclusion 2: Landco silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty over clayey, mixed (calcareous), mesic—3 percent

• Inclusion 3: Rosney silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—2 percent

Characteristics of the Yipor Soil

Position on landscape: Fan skirts

Parent material: Silty mixed alluvium influenced by loess

Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, bud sagebrush

Typical Profile

0 to 8 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 60 inches or more—silt loam, very fine sandy loam; massive; slightly hard, very friable; moderately to strongly saline (8 to 25 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 9.4 to 11.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flat remnants adjacent to fan skirts
Contrasting features: Moderately well drained, silty clay loam substratum
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 2
Position on landscape: Depressional areas adjacent to lower margins of fan skirts
Contrasting features: Clayey substratum
Distinctive present vegetation: Saltbush
Inclusion 3
Position on landscape: Shallow fan drainageways
Contrasting features: Strongly saline surface layer
Distinctive present vegetation: Saltbush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

740—Playas

Map Unit Setting

Position on landscape: Bolson floors
Elevation: 4,500 to 5,600 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Playas—100 percent

Characteristics of the Playas

Position on landscape: Lowest sink area of bolson floors
Slope features: Length—long; shape—smooth or slightly concave
Dominant present vegetation: None

770—Prida silt loam

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Prida silt loam, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed, (calcareous), mesic—5 percent
• Inclusion 3: Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent
• Inclusion 4: Duffer very fine sandy loam, 0 to 2 percent slopes—Aquic Calciorthids, fine-silty, carbonatic, mesic—2 percent

Characteristics of the Prida Soil

Position on landscape: Alluvial flats
Parent material: Silty mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, saltbush, seepweed, inland saltgrass, alkali sacaton

Typical Profile

0 to 7 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (30 to 50 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
7 to 60 inches or more—silt loam, silty clay loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 40 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-6, A-4, A-7

Soil and Water Features

Depth to seasonal high water table: January through December—36 to 60 inches; rest of year—below 60 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Low areas of alluvial flats
Contrasting features: Water table at a depth of 30 to 36 inches throughout the year
Distinctive present vegetation: Black greasewood, basin wildrye
Inclusion 2
Position on landscape: Alluvial flat remnants
Contrasting features: Moderately well drained
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 3
Position on landscape: Alluvial flat remnants
Contrasting features: Well drained
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 4
Position on landscape: Stream terraces adjacent to alluvial flats
Contrasting features: Horizon of calcium carbonate accumulation
Distinctive present vegetation: Alkali sacaton, saltbush
Other inclusions of minor extent
Position on landscape: Lower alluvial flat remnants
Contrasting features: Clayey substratum
Distinctive present vegetation: Alkali sacaton, saltbush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:

Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—excess salt, excess sodium

Daily cover for landfill: Poor—excess salt
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Percs slowly, erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X010N

774—Prida-Sonoma silty clay loams

Map Unit Setting

Position on landscape: Basin floor
Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Prida silty clay loam, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—60 percent
• Sonoma silty clay loam, strongly saline, 0 to 2 percent slopes, occasionally flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Prida Soil

Position on landscape: Alluvial flats
Parent material: Silty mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, saltbush, iodinebush, inland saltgrass, alkali sacaton

Typical Profile

0 to 7 inches—silty clay loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (30 to 50 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL; estimated AASHTO classification—A-6
7 to 62 inches or more—silt loam, silty clay loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 40 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-6, A-4, A-7

Soil and Water Features

Depth to seasonal high water table: January through December—36 to 60 inches; rest of year—below 60 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: High

Characteristics of the Sonoma Soil

Position on landscape: Flood plains
Parent material: Silty mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Alkali sacaton, alkali muhly

Typical Profile

0 to 8 inches—silty clay loam; subangular blocky structure; hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 60 to 80); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
8 to 60 inches or more—silty clay loam, silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through

June—18 to 36 inches; rest of year—below 36 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Low areas of alluvial flats adjacent to flood plains
Contrasting features: Strongly sodium affected in the upper part of the profile, slightly affected in the lower part
Distinctive present vegetation: Black greasewood, basin wildrye
Inclusion 2
Position on landscape: Alluvial flat remnants adjacent to flood plains
Contrasting features: Moderately well drained
Distinctive present vegetation: Black greasewood, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture

Wildlife habitat elements:
Suitability of the Prida soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair
Suitability of the Sonoma soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings and Restrictive Features of the Prida Soil for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Percs slowly, erodes easily, excess salt
Terraces and diversions: Erodes easily

Ratings and Restrictive Features of the Sonoma Soil for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, wetness
Drainage: Percs slowly, flooding, frost action
Irrigation: Wetness, percs slowly, erodes easily
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: Prida soil—VIw, irrigated, and VIIw, nonirrigated; Sonoma soil—VIw, irrigated, and VIIw, nonirrigated
Range site: Prida soil—024X010N; Sonoma soil—024X009N

780—Pumper silt loam

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,800 to 5,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Pumper silt loam, 0 to 2 percent slopes—Typic Camborthids, sandy-skeletal, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Creemon silt loam, 0 to 2 percent

slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 2: Hessing silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Pumper Soil

Position on landscape: Fan skirts
Parent material: Loess high in volcanic ash over sandy mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—silt loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
12 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sand; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); massive; hard, friable; moderately alkaline (pH 8.3); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.1 to 4.8 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth, slightly higher fan-skirt remnants
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Smooth, fan drainageways of fan skirts
Contrasting features: Loamy throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Lower margins of fan skirts
Contrasting features: Silty clay loam subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—very poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Poor—too sandy, small stones, seepage
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—too arid, area reclaim, small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 024X002N

800—Raglan silt loam, gravelly substratum

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,600 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Raglan silt loam, gravelly substratum, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 3: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Raglan Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 47 inches—stratified fine sandy loam to silt loam; 0 to 5 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6
47 to 60 inches or more—stratified gravelly sandy loam to very gravelly coarse sand; 40 to 60 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SP-SM, SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 8.3 to 9.5 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper margins of fan skirts
Contrasting features: Slightly coarser textured subsoil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Adjacent smooth inset fans
Contrasting features: Silt loam subsoil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Lower margins of fan skirts
Contrasting features: Silt loam subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland
Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:

Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—low strength
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Moderate—excess salt, thin layer, piping
Drainage: Deep to water

Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

804—Raglan silty clay loam, moderately saline

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Raglan silty clay loam, moderately saline, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—4 percent
• Inclusion 3: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—3 percent
• Inclusion 4: Rosney silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—3 percent

Characteristics of the Raglan Soil

Position on landscape: Fan skirts
Parent material: Loamy mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, seepweed

Typical Profile

0 to 8 inches—silty clay loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-7
8 to 47 inches—stratified fine sandy loam to silt loam; 0 to 5 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.8); slightly saline to moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6
47 to 60 inches or more—stratified gravelly sandy loam to very gravelly coarse sand; 40 to 60 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SP-SM, SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 8.3 to 9.5 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper margins of fan skirts
Contrasting features: Fine sandy loam throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Adjacent inset fans
Contrasting features: Silt loam throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Fan skirt remnants
Contrasting features: Silt loam throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 4
Position on landscape: Alluvial flat remnants adjacent to fan skirts
Contrasting features: Silty clay loam substratum
Distinctive present vegetation: Saltbush
Other inclusions of minor extent
Position on landscape: Small depressional areas and extensions of the main playas
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat; irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—low strength
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Moderate—excess salt, thin layer, piping
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

805—Raglan silt loam

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,700 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Raglan silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Antel silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—4 percent
• Inclusion 2: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 3: Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—4 percent
• Inclusion 4: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—3 percent

Characteristics of the Raglan Soil

Position on landscape: Broad fan skirts
Parent material: Loess high in volcanic ash over mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 6 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
6 to 14 inches—silt loam; 0 to 5 percent pebbles (by weight); subangular blocky structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6
14 to 60 inches or more—stratified very fine sandy loam to silty clay loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, ML; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.3 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper margins of fan skirts
Contrasting features: Silty substratum

Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2

Position on landscape: Alluvial flats adjacent to fan skirts
Contrasting features: Strongly saline surface layers
Distinctive present vegetation: Black greasewood, shadscale

Inclusion 3

Position on landscape: Recent adjacent alluvial flats
Contrasting features: Very fine sandy loam substratum
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 4

Position on landscape: Remnants of fan skirts adjacent to alluvial flats
Contrasting features: Silt loam substratum
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:

Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, piping
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

814—Quarz-Linrose-Slaven association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,400 to 7,600 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days

Composition

Major components:

- Quarz very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—40 percent
- Linrose very gravelly loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—30 percent
- Slaven extremely gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—15 percent

Contrasting inclusions:

- Inclusion 1: Aridic Haploxerolls, 8 to 30 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent
- Inclusion 2: Glean gravelly silt loam, 30 to 50 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent
- Inclusion 3: Rock outcrop—3 percent
- Inclusion 4: Rubble land—2 percent

Characteristics of the Quarz Soil

Position on landscape: East-, west-, and upper south-facing side slopes of mountains
Parent material: Kind—residuum; source—shale and sandstone
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Sandberg bluegrass
Surface cover: 15 percent pebbles

Typical Profile

0 to 7 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

7 to 26 inches—very gravelly clay, very gravelly clay loam; 0 to 25 percent cobbles and stones and 50 to 75 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR

less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-7
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.2 to 2.7 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Linrose Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—chert, shale and quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Idaho fescue, Indian ricegrass, rabbitbrush

Typical Profile

0 to 8 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-4, A-1
8 to 26 inches—very gravelly loam, very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.2 to 3.4 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Slaven Soil

Position on landscape: Lower, south-facing side slopes of mountains
Parent material: Kind—residuum; source—chert, shale, and quartzite
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Sandberg bluegrass

Typical Profile

0 to 5 inches—extremely gravelly loam; 10 to 20 percent cobbles and stones and 75 to 85 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
5 to 22 inches—extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam; 75 to 85 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
22 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.0 to 2.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Crests and shoulder slopes of mountains
Contrasting features: Very cobbly surface layer
Distinctive present vegetation: Low sagebrush
Inclusion 2
Position on landscape: Concave snow pockets below shoulder slopes of mountains
Contrasting features: Thick, dark colored surface layer
Distinctive present vegetation: Idaho fescue, mountain big sagebrush
Inclusion 3
Position on landscape: Rimrock and scattered peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 4
Position on landscape: Rock screes below rimrock
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Quarz soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Linrose soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Slaven soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Quarz Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer, large stones

Ratings of the Linrose Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Slaven Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, too clayey, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Quarz soil—VIIs, nonirrigated; Linrose soil—VIIs, nonirrigated; Slaven soil—VIIs, nonirrigated
Range site: Quarz soil—024X029N; Linrose soil—024X042N; Slaven soil—024X029N

816—Quarz-Linrose-Cleavage association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 7,900 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Quarz cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—50 percent
• Linrose very cobbly loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—20 percent
• Cleavage extremely cobbly loam, 50 to 75 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Graley extremely gravelly loam, 30 to 50

percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 2: Aridic Argixerolls, 15 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 3: Aridic Argixerolls, 15 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—5 percent

Characteristics of the Quarz Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—shale and sandstone
Slope features: Length—long; shape—convex
Dominant present vegetation: Antelope bitterbrush, mountain big sagebrush, bluebunch wheatgrass, Idaho fescue

Typical Profile

0 to 7 inches—cobbly loam; 25 to 30 percent cobbles and stones and 10 to 20 percent pebbles (by weight); granular structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
7 to 26 inches—very gravelly clay, very gravelly clay loam; 0 to 25 percent cobbles and stones and 50 to 75 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-7
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.2 to 2.7 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—2; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Linrose Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—chert, shale and quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, snowberry, mountain brome

Typical Profile

0 to 8 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 30 to 50 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4
8 to 26 inches—very gravelly loam, very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.2 to 3.4 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Cleavage Soil

Position on landscape: Crests, shoulders, and upper side slopes of mountains
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Idaho fescue, bluegrass

Typical Profile

0 to 4 inches—extremely cobbly loam; 45 to 55 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified

classification—GM-GC, GC; estimated AASHTO classification—A-2
4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 25 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave upper side slopes of mountains
Contrasting features: Bedrock within a depth of 20 inches, very gravelly clay subsoil
Inclusion 2
Position on landscape: Convex areas on south- and west-facing side slopes of mountains
Contrasting features: Very deep soil that has a very clayey subsoil
Distinctive present vegetation: Low sagebrush
Inclusion 3
Position on landscape: Concave snow pockets on north- and east-facing side slopes of mountains
Contrasting features: Additional moisture from drifted snow
Distinctive present vegetation: Serviceberry, Idaho fescue

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Quarz soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Linrose soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Quarz Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, too clayey, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer, large stones

Ratings of the Linrose Soil for Selected Uses
Range seeding: Poor—droughty, large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Cleavage Soil for Selected Uses
Range seeding: Poor—large stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Quarz soil—VIIs, nonirrigated; Linrose soil—VIIs, nonirrigated; Cleavage soil—VIIs, nonirrigated
Range site: Quarz soil—025X009N; Linrose soil—024X042N; Cleavage soil—025X024N

830—Reese silt loam

Map Unit Setting

Position on landscape: Basin floor
Elevation: 4,400 to 4,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Reese silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Argenta very fine sandy loam, 0 to 2 percent slopes—Aeric Halaquepts, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Durorthidic Torriorthents, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Reese Soil

Position on landscape: Flood plains
Parent material: Loamy mixed alluvium high in pyroclastics
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, shadscale, basin wildrye, spiny horsebrush, inland saltgrass

Typical Profile

0 to 9 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
9 to 60 inches or more—stratified silt loam to silty clay loam; massive; hard, friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: March through July—18 to 36 inches; rest of year—below 36 inches
Flooding: Frequency—occasional; duration—brief or long; months—April through May
Permeability: Slow
Available water capacity: 9.2 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave alluvial flats
Contrasting features: Sandy loam throughout the profile
Distinctive present vegetation: Black greasewood, inland saltgrass
Inclusion 2
Position on landscape: Alluvial flat remnants
Contrasting features: Moderately well drained
Distinctive present vegetation: Iodinebush, alkali sacaton
Inclusion 3
Position on landscape: Convex alluvial flats
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Black greasewood, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture
Potential uses: Rangeland, wildlife habitat, irrigated native pasture, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—good

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Severe—wetness
Local roads and streets: Severe—flooding, frost action
Roadfill: Fair—low strength, shrink-swell, wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess sodium, excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness, excess sodium, excess salt
Drainage: Percs slowly, flooding, frost action

Irrigation: Wetness, percs slowly, erodes easily
Terraces and diversions: Erodes easily, wetness, percs slowly

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X011N

835—Reese-Ocala association

Map Unit Setting

Position on landscape: Basin floor
Elevation: 4,600 to 4,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Reese silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic—45 percent
• Ocala silt loam, strongly saline-sodic, 0 to 2 percent slopes, rarely flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Typic Torriorthents, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—9 percent
• Inclusion 2: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—1 percent

Characteristics of the Reese Soil

Position on landscape: Flood plains near river channels
Parent material: Kind—loamy alluvium high in pyroclastics; source—volcanic rock
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, seepweed, pickleweed, saltbush

Typical Profile

0 to 9 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
9 to 60 inches or more—stratified silt loam to silty clay loam; massive; hard, friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: March through July—18 to 36 inches; rest of year—below 36 inches
Flooding: Frequency—occasional; duration—brief or long; months—April through May
Permeability: Slow
Available water capacity: 9.2 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Characteristics of the Ocala Soil

Position on landscape: Outer margins of flood plains and alluvial flats
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye

Typical Profile

0 to 6 inches—silt loam; platy structure; slightly hard, friable; very strongly alkaline (pH 9.2); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-4
6 to 13 inches—silt loam, silty clay loam; massive; hard, friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7
13 to 60 inches or more—silt loam, silty clay loam; massive; hard, friable and brittle; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: March through May—42 to 60 inches; rest of year—below 60 inches

Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 11.4 to 17.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth stream terraces
Contrasting features: Moderately well drained
Distinctive present vegetation: Black greasewood
Inclusion 2
Position on landscape: Smooth alluvial flats
Contrasting features: Frequently flooded
Distinctive present vegetation: Black greasewood, basin wildrye
Inclusion 3
Position on landscape: Smooth alluvial flat remnants
Contrasting features: Moderately well drained
Distinctive present vegetation: Black greasewood, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Reese soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair
Suitability of the Ocala soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings of the Reese Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Severe—wetness
Local roads and streets: Severe—flooding, frost action
Roadfill: Poor—low strength, shrink-swell, wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess sodium, excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness, excess sodium, wetness

Ratings of the Ocala Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Reese soil—VIIw, nonirrigated; Ocala soil—VIIw, nonirrigated
Range site: Reese soil—024X011N; Ocala soil—024X011N

841—Wendane Variant silt loam

Map Unit Setting

Position on landscape: Basin floor remnants
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Wendane Variant silt loam, 0 to 2 percent slopes—Aeric Halaquepts, loamy-skeletal, mixed (calcareous), mesic—95 percent
Contrasting inclusions:
• Inclusion 1: Whirlo very gravelly loam, 0 to 2 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Wendane Variant Soil

Position on landscape: Basin floor remnants
Parent material: Loess, volcanic ash, and mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Alkali muhly, alkali sacaton, Indian ricegrass, alkali cordgrass

Typical Profile

0 to 10 inches—silt loam; subangular blocky structure; hard, friable; strongly alkaline (pH 9.0); strongly saline (30 to 50 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4

10 to 18 inches—gravelly silt loam; 30 to 50 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL-ML, CL, GM-GC, GC; estimated AASHTO classification—A-2, A-4, A-6

18 to 60 inches or more—very gravelly loam; 50 to 65 percent pebbles (by weight); massive; hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: February through June—18 to 30 inches; rest of year—below 30 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 6.7 to 7.9 inches
Water-supplying capacity: 9 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial fans adjacent to basin floors
Contrasting features: Well drained
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture
Potential uses: Rangeland, wildlife habitat, irrigated pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—small stones, excess sodium
Shallow excavations: Severe—wetness
Local roads and streets: Severe—frost action
Roadfill: Fair—wetness, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—wetness, excess salt, excess sodium
Drainage: Frost action, excess salt
Irrigation: Wetness, excess salt, erodes easily
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X009N

850—Relley silt loam

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Antel silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent
• Inclusion 2: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 3: Bubus very fine sandy loam—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent
• Inclusion 4: Wholan very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—3 percent

Characteristics of the Relley Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, cheatgrass

Typical Profile

0 to 8 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

8 to 16 inches—silt loam; 0 to 5 percent pebbles (by weight); prismatic structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

16 to 28 inches—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

28 to 63 inches or more—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10.8 to 12.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave areas of fan skirts
Contrasting features: Moderately well drained
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Concave alluvial flat remnants adjacent to fan skirts
Contrasting features: Calcareous and moderately saline-sodic throughout the profile
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 3
Position on landscape: Concave alluvial flat remnants adjacent to fan skirts
Contrasting features: Calcareous and loamy throughout the profile
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 4
Position on landscape: Adjacent slightly concave inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Winterfat

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretative Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

851—Relley silt loam, cemented substratum

Map Unit Setting

Position on landscape: Fan skirts

Elevation: 4,400 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Relley silt loam, cemented substratum, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Antel silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—10 percent
• Inclusion 2: Raglan silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—5 percent

Characteristics of the Relley Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Indian ricegrass

Typical Profile

0 to 8 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
8 to 16 inches—silt loam; 0 to 5 percent pebbles (by weight); prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
16 to 28 inches—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
28 to 50 inches—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
50 to 60 inches or more—strongly cemented duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10.8 to 12.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—3; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave areas of fan skirts
Contrasting features: Very deep soil, lacks a duripan
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Adjacent slightly concave inset fans
Contrasting features: Calcareous throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—too arid
Daily cover for landfill: Fair—thin layer, cemented pan
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell, thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage, cemented pan
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water

Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

852—Relley silt loam, strongly saline

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,600 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Relley silt loam, strongly saline, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Antel silt loam, moderately saline, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent
• Inclusion 2: Wholan very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—5 percent

Characteristics of the Relley Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—slightly convex to slightly concave
Dominant present vegetation: Shadscale, black greasewood, bud sagebrush

Typical Profile

0 to 8 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
8 to 16 inches—silt loam; 0 to 5 percent pebbles (by weight); prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
16 to 28 inches—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
28 to 60 inches or more—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10.8 to 12.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave areas on fan skirts
Contrasting features: Moderately well drained, moderately saline
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Adjacent smooth inset fans
Contrasting features: Silt loam throughout the profile, nonsaline
Distinctive present vegetation: Winterfat, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland
Potential uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: VIs, irrigated, and VIIs, nonirrigated
Range site: 024X003

853—Relley silty clay loam

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,600 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Relley silty clay loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Antel silty clay loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—10 percent

Characteristics of the Relley Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth to slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—silty clay loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); strongly saline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-6, A-7
8 to 16 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
16 to 28 inches—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
28 to 60 inches or more—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10.8 to 12.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave areas of fan skirts
Contrasting features: Moderately well drained
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants

(nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features of the Relley Soil for Selected Uses and Practices

Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

855—Relley-Broyles association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—60 percent
• Broyles very fine sandy loam, 0 to 2 percent slopes, frequently flooded—Duric Camborthids, coarse-loamy, mixed, mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—8 percent
• Inclusion 2: Entic Durorthids, 0 to 2 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—1 percent
• Inclusion 3: Typic Torriorthents, 0 to 4 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—1 percent

Characteristics of the Relley Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, horsebrush, spiny hopsage, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
8 to 16 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
16 to 28 inches—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
28 to 60 inches or more—silt loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10.8 to 12.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Broyles Soil

Position on landscape: Inset fans

Parent material: Loess capped, loamy, volcanic alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, winterfat, bud sagebrush

Typical Profile

0 to 5 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
5 to 14 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.8); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
14 to 60 inches or more—gravelly fine sandy loam; 30 to 45 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Flooding: Frequency—frequent; duration—very brief; months—December through May
Permeability: Moderately rapid
Available water capacity: 5.9 to 7.7 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flat remnants adjacent to lower margins of fan skirts
Contrasting features: Calcareous throughout the profile
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 2
Position on landscape: Nonburied fan piedmont remnants
Contrasting features: Strongly cemented duripan at a depth of 10 to 20 inches
Distinctive present vegetation: Shadscale
Inclusion 3
Position on landscape: Adjacent to channels
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability of the Relley soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Broyles soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and Restrictive Features of the Relley Soil for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt

Ratings and Restrictive Features of the Broyles Soil for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Fair—small stones
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Relley soil—IIc, irrigated, and VIIc, nonirrigated; Broyles soil—IIIw, irrigated, and VIIw, nonirrigated

Range site: Relley soil—024X002N; Broyles soil—024X014N

861—Rixie silty clay loam, strongly saline

Map Unit Setting

Position on landscape: Basin floors
Elevation: 4,500 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Rixie silty clay loam, strongly saline, 0 to 2 percent slopes—Aquic Duric Haploxerolls, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Prida silt loam, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Sonoma silt loam, 0 to 2 percent slopes, occasionally flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Rixie Soil

Position on landscape: Flood plains
Parent material: Kind—alluvium influenced by volcanic ash; source—volcanic rock
Slope features: Length—long; shape—smooth
Dominant present vegetation: Inland saltgrass, alkali sacaton, seepweed

Typical Profile

0 to 10 inches—silty clay loam; subangular blocky structure; hard, friable; strongly alkaline (pH 8.8); strongly saline (20 to 40 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, ML; estimated AASHTO classification—A-7
10 to 60 inches or more—stratified silt loam to silty clay; massive; hard, firm; strongly alkaline (pH 8.6); strongly saline (16 to 25 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through July—24 to 48 inches; rest of year—below 48 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through June
Permeability: Slow
Available water capacity: 10.2 to 11.4 inches
Water-supplying capacity: 10 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flats adjacent to flood plains
Contrasting features: Rarely flooded
Distinctive present vegetation: Iodinebush, alkali sacaton
Inclusion 2
Position on landscape: Outer margins of flood plains
Contrasting features: Poorly drained
Distinctive present vegetation: Alkali sacaton, alkali cordgrass
Inclusion 3
Position on landscape: Alluvial flats
Contrasting features: Strongly sodium-affected surface layer
Distinctive present vegetation: Black greasewood, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt
Daily cover for landfill: Poor—excess salt, too clayey
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, too clayey

Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt
Drainage: Percs slowly, flooding, frost action
Irrigation: Wetness, percs slowly, erodes easily
Terraces and diversions: Erodes easily, wetness, percs slowly

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X009N

862—Rixie silty clay loam, drained, strongly saline

Map Unit Setting

Position on landscape: Basin floors
Elevation: 4,400 to 4,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Rixie silty clay loam, drained, strongly saline, 0 to 2 percent slopes—Aquic Duric Haploxerolls, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Argenta very fine sandy loam, 0 to 2 percent slopes—Aeric Halaquepts, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Paranat silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 3: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—3 percent
• Inclusion 4: Rose Creek silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, coarse-loamy, mixed, mesic—3 percent

Characteristics of the Rixie Soil

Position on landscape: Flood plains with entrenched channels
Parent material: Kind—alluvium influenced by volcanic ash; source—volcanic rock
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, basin wildrye, shadscale, inland saltgrass

Typical Profile

0 to 10 inches—silty clay loam; subangular blocky structure; hard, friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL; estimated AASHTO classification—A-7, A-6
10 to 60 inches or more—stratified silt loam to silty clay; massive; hard, firm; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through July—48 to 72 inches; rest of year—below 72 inches
Frequency of flooding: Rare
Permeability: Slow
Available water capacity: 10.2 to 11.4 inches
Water-supplying capacity: 10 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flat remnants
Contrasting features: Fine sandy loam substratum
Distinctive present vegetation: Black greasewood
Inclusion 2
Position on landscape: Lowest areas on flood plains
Contrasting features: Frequently flooded
Distinctive present vegetation: Sedge, alkali cordgrass
Inclusion 3
Position on landscape: Alluvial flats adjacent to flood plains
Contrasting features: Fine-silty throughout the profile; thin, light colored surface layer
Distinctive present vegetation: Alkali sacaton, basin wildrye
Inclusion 4
Position on landscape: Areas adjacent to stream channels
Contrasting features: Frequently flooded, sandy loam substratum
Distinctive present vegetation: Sedge, creeping wildrye
Other inclusions of minor extent
Position on landscape: Lower areas on flood plains
Contrasting features: Occasionally flooded

Distinctive present vegetation: Alkali sacaton, alkali bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—good

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, too clayey
Shallow excavations: Moderate—wetness, too clayey
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt
Drainage: Percs slowly, flooding, frost action
Irrigation: Wetness, percs slowly, erodes easily
Terraces and diversions: Erodes easily, percs slowly

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X007N

863—Rixie-Rixie, sodic, complex

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Rixie silty clay loam, 0 to 2 percent slopes—Aquic Durorthidic Haploxerolls, fine-loamy, mixed, mesic—50 percent
• Rixie silt loam, sodic, 0 to 2 percent slopes—Aquic Durorthidic Haploxerolls, fine-loamy, mixed, mesic—40 percent

Contrasting inclusions:
• Inclusion 1: Prida silt loam, 0 to 2 percent slopes—Aquic Durothidic Torriorthents, fine-silty, mixed (calcareous), mesic—10 percent

Characteristics of the Rixie Soil

Position on landscape: Low-lying areas on flood plains
Parent material: Kind—alluvium; source—dominantly volcanic rock
Slope features: Length—short; shape—smooth
Dominant present vegetation: Inland saltgrass, iodinebush

Typical Profile

0 to 10 inches—silty clay loam; subangular blocky structure; hard, friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, CM; estimated AASHTO classification—A-7
10 to 60 inches or more—stratified silt loam to silty clay; massive; hard, firm; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through July—24 to 48 inches; rest of year—below 48 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through June
Permeability: Slow
Available water capacity: 10.2 to 11.4 inches
Water-supplying capacity: 10 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: High

Characteristics of the Rixie, Sodic, Soil

Position on landscape: Undulating mounds on flood plains
Parent material: Kind—alluvium; source—dominantly volcanic rock
Slope features: Length—short; slightly concave to slightly convex
Dominant present vegetation: Alkali sacaton, inland saltgrass, iodinebush

Typical Profile

0 to 15 inches—silt loam; subangular blocky structure; hard, friable; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL; estimated AASHTO classification—A-6

15 to 60 inches or more—stratified silt loam to silty clay; massive; hard, firm; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through July—24 to 48 inches; rest of year—below 48 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through June
Permeability: Slow
Available water capacity: 10.2 to 11.4 inches
Water-supplying capacity: 10 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flats adjacent to flood plains
Contrasting features: Rarely flooded
Distinctive present vegetation: Iodinebush, alkali sacaton

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability of the Rixie soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—fair; shallow water areas—good
Suitability of the Rixie, sodic, soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—good

Ratings and Restrictive Features of the Rixie Soil for Selected Uses and Practices
Range seeding: Poor—excess salt
Daily cover for landfill: Poor—excess salt, too clayey
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt
Drainage: Percs slowly, flooding, frost action
Irrigation: Wetness, percs slowly, erodes easily
Terraces and diversions: Erodes easily, wetness, percs slowly

Ratings and Restrictive Features of the Rixie, Sodic, Soil for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, too clayey
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt
Drainage: Percs slowly, flooding, frost action
Irrigation: Wetness, percs slowly, erodes easily
Terraces and diversions: Erodes easily, wetness, percs slowly

Interpretive Groups

Capability classification: Rixie soil—IIIw, irrigated, and VIIw, nonirrigated; Rixie, sodic, soil—VIw, irrigated, and VIIw, nonirrigated
Range site: Rixie soil—024X009N; Rixie, sodic, soil—024X010N

864—Rixie silty clay loam

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Rixie silty clay loam, 0 to 2 percent slopes—Aquic Duric Haploxerolls, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Paranat silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Rose Creek silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Rixie Soil

Position on landscape: Flood plains
Parent material: Kind—alluvium influenced by volcanic ash; source—dominantly volcanic rock
Slope features: Length—long; shape—smooth
Dominant present vegetation: Spikerush, sedge, bluegrass, creeping wildrye, inland saltgrass

Typical Profile

0 to 10 inches—silty clay loam; angular blocky structure; hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL, ML; estimated AASHTO classification—A-7
10 to 43 inches—stratified silt loam to silty clay; massive; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7
43 to 60 inches or more—stratified very gravelly sand to fine sandy loam; 35 to 60 percent pebbles (by weight); massive and single grained; slightly hard, friable and loose; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: February through July—24 to 48 inches; rest of year—below 48 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through June
Permeability: In the upper 43 inches—slow; below this depth—moderately rapid
Available water capacity: 8.0 to 9.5 inches
Water-supplying capacity: 11 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower parts of flood plains
Contrasting features: Frequently flooded
Distinctive present vegetation: Creeping wildrye
Inclusion 2
Position on landscape: Slightly convex natural levees along channels
Contrasting features: Sandy loam profile
Distinctive present vegetation: Creeping wildrye
Inclusion 3
Position on landscape: Alluvial flats adjacent to channels
Contrasting features: Strongly salt and sodium affected
Distinctive present vegetation: Black greasewood, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—good; shallow water areas—good

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Fair—excess salt
Daily cover for landfill: Poor—too clayey
Shallow excavations: Severe—wetness, cutbanks cave
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Fair—wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Moderate—thin layer, piping, wetness
Drainage: Percs slowly, flooding, frost action
Irrigation: Wetness, percs slowly, erodes easily
Terraces and diversions: Erodes easily, wetness, percs slowly

Interpretive Groups

Capability classification: IIw, irrigated, and VIw, nonirrigated
Range site: 025X001N

870—Roca-Bregar-Linrose association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Roca very cobbly loam, 50 to 75 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—35 percent
• Bregar gravelly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—25 percent
• Linrose gravelly loam, 50 to 75 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Rubble land—6 percent
• Inclusion 2: Aridic Argixerolls, 50 to 75 percent slopes—5 percent
• Inclusion 3: Rock outcrop—3 percent
• Inclusion 4: Cumulic Haplaquolls, 2 to 8 percent slopes—Cumulic Haplaquolls, loamy-skeletal, mixed, frigid—1 percent

Characteristics of the Roca Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—cherts and shales
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Bluebunch wheatgrass, big sagebrush, Thurber needlegrass

Typical Profile

0 to 5 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 15 to 25 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
5 to 27 inches—very gravelly clay loam, very gravelly clay; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
27 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Bregar Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Idaho fescue, low sagebrush, black sagebrush

Typical Profile

0 to 4 inches—gravelly loam; 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; slightly acid (pH 6.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
4 to 11 inches—very gravelly clay loam, extremely gravelly loam, very cobbly sandy clay loam; 0 to 40 percent cobbles and stones and 65 to 80 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 12 inches
Depth to seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Medium
Available water capacity: 1.0 to 1.3 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Linrose Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—shale, chert, and quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Idaho fescue, bluegrass

Typical Profile

0 to 8 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, ML; estimated AASHTO classification—A-4
8 to 26 inches—very gravelly loam, very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.2 to 3.4 inches
Water-supplying capacity: 9 inches
Runoff: Very rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Rock screes on side slopes of mountains
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Concave, north-facing side slopes of mountains
Contrasting features: Deep to bedrock
Distinctive present vegetation: Idaho fescue, mountain big sagebrush
Inclusion 3
Position on landscape: Rimrock and scattered peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 4
Position on landscape: Narrow perennial drainageways of mountains
Contrasting features: Thick, dark colored surface layer, receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bregar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Linrose soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Roca Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey

Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Bregar Soil for Selected Uses
Range seeding: Poor—droughty, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Linrose Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Roca soil—VIIs, nonirrigated; Bregar soil—VIIs, nonirrigated; Linrose soil—VIIe, nonirrigated
Range site: Roca soil—024X028N; Bregar soil—024X016N; Linrose soil—024X042N

872—Roca-Linrose-Wiskan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 8,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Roca very gravelly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—35 percent
• Linrose very gravelly loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—30 percent
• Wiskan very gravelly loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Glean gravelly silt loam, 30 to 50 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—6 percent
• Inclusion 2: Bucan gravelly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—2 percent
• Inclusion 3: Bregar extremely gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Roca Soil

Position on landscape: South-facing, upper and mid side slopes of mountains
Parent material: Kind—residuum; source—chert and shale
Slope features: Length—long; shape—smooth to convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass
Surface cover: 45 percent pebbles

Typical Profile

0 to 5 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
5 to 27 inches—very gravelly clay loam, very gravelly clay; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
27 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Linrose Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—shales, cherts, and quartzite
Dominant present vegetation: Black sagebrush, Idaho fescue, bluegrass

Typical Profile

0 to 8 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-4, A-1
8 to 26 inches—very gravelly loam, very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.2 to 3.4 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Wiskan Soil

Position on landscape: East- and west-facing side slopes of mountains
Parent material: Kind—thin loess mantle over colluvium and residuum; source—chert and other various kinds of rock
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass, Douglas rabbitbrush

Typical Profile

0 to 16 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); granular; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2, A-4
16 to 28 inches—very gravelly clay loam, very gravelly loam, extremely gravelly clay loam; 10 to 25 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.4 to 3.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing back slopes of mountains
Contrasting features: Receives additional soil moisture from drifted snow
Distinctive present vegetation: Idaho fescue, mountain big sagebrush, snowberry
Inclusion 2
Position on landscape: South-facing foot slopes of mountains
Contrasting features: Clay subsoil
Distinctive present vegetation: Wyoming big sagebrush, bluebunch wheatgrass
Inclusion 3
Position on landscape: Crests of mountains
Contrasting features: Bedrock within a depth of 20 inches

Distinctive present vegetation: Black sagebrush, low sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Linrose soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Wiskan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Roca Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Linrose Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Wiskan Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Roca soil—VIIs, nonirrigated; Linrose soil—VIIs, nonirrigated; Wiskan soil—VIIs, nonirrigated
Range site: Roca soil—024X028N; Linrose soil—024X042N; Wiskan soil—024X031N

873—Roca-Reluctan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,400 to 7,400 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Roca very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—50 percent
• Reluctan very cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—35 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 15 to 30 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—6 percent
• Inclusion 2: Rock outcrop—4 percent
• Inclusion 3: Welch clay loam, drained, 4 to 8 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed, frigid—3 percent
• Inclusion 4: Rubble land—2 percent

Characteristics of the Roca Soil

Position on landscape: Predominantly south- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—chert and shale
Slope features: Length—long; shape—smooth to concave
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Thurber needlegrass, basin wildrye

Typical Profile

0 to 5 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 15 to 25 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6

5 to 27 inches—very gravelly clay loam, very gravelly clay; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
27 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Reluctan Soil

Position on landscape: Predominantly north- and east-facing side slopes of mountains
Parent material: Kind—loamy residuum and colluvium; source—rhyolitic rocks
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, Thurber needlegrass

Typical Profile

0 to 13 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 40 to 55 percent pebbles (by weight); platy; slightly hard, friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4, A-2
13 to 38 inches—gravelly clay loam, gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
38 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.0 to 5.2 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Predominately north- and east-facing, concave foot slopes of mountains
Contrasting features: Deep to bedrock and has a clayey subsoil
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Shoulder slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Concave, narrow drainageways of mountains
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Roca Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey

Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Reluctan Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—piping, large stones

Interpretive Groups

Capability classification: Roca soil—VIIs, nonirrigated; Reluctan soil—VIIs, nonirrigated
Range site: Roca soil—024X028N; Reluctan soil—024X021N

875—Roca-Glean-Bregar association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,400 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Roca very cobbly loam, 30 to 75 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—40 percent
• Glean gravelly silt loam, 30 to 75 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—25 percent
• Bregar extremely gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Aridic Argixerolls, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—7 percent
• Inclusion 2: Lithic Haplargids, 30 to 50 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Roca Soil

Position on landscape: South-, west-, and east-facing side slopes of mountains
Parent material: Kind—residuum; source—chert and shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Bluebunch wheatgrass, mountain big sagebrush, Thurber needlegrass

Typical Profile

0 to 5 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 15 to 25 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
5 to 27 inches—very gravelly clay loam, very gravelly clay; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
27 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Glean Soil

Position on landscape: North-facing back slopes of mountains
Parent material: Kind—residuum and colluvium; source—various kinds of rock
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Mountain big sagebrush, Idaho fescue, bluegrass

Typical Profile

0 to 6 inches—gravelly silt loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2);

estimated Unified classification—SM, GM, ML; estimated AASHTO classification—A-4

6 to 49 inches—very gravelly loam, very gravelly sandy loam; 0 to 25 percent cobbles and stones and 40 to 75 percent pebbles (by weight); massive; soft, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

49 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.1 to 5.0 inches
Water-supplying capacity: 12 inches
Runoff: Very rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—3; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Bregar Soil

Position on landscape: Crests and shoulder slopes of mountains
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, bluegrass, black sagebrush

Typical Profile

0 to 4 inches—extremely gravelly loam; 10 to 20 percent cobbles and stones and 70 to 80 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

4 to 11 inches—very gravelly clay loam, very cobbly sandy clay loam, extremely gravelly sandy clay loam; 5 to 45 percent cobbles and stones and 65 to 75 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 12 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.0 to 1.3 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Irregular to slightly concave, south-facing side slopes of mountains
Contrasting features: Thick, dark colored surface layer and a layer of clay accumulation
Distinctive present vegetation: Mountain big sagebrush, bluebunch wheatgrass

Inclusion 2
Position on landscape: Convex, north-facing shoulder slopes of mountains
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Steep, eroded side slopes and rimrock along south-facing shoulder slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Glean soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bregar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Roca Soil for Selected Uses
Range seeding: Poor—large stones

Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Glean Soil for Selected Uses
Range seeding: Fair—droughty, small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Bregar Soil for Selected Uses
Range seeding: Poor—droughty, small stones, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Roca soil—VIIs, nonirrigated; Glean soil—VIIe, nonirrigated; Bregar soil—VIIs, nonirrigated
Range site: Roca soil—024X028N; Glean soil—024X023N; Bregar soil—024X016N

881—Rose Creek silt loam, drained, strongly saline

Map Unit Setting

Position on landscape: Stream terraces
Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Rose Creek silt loam, drained, strongly saline, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Rixie silty clay loam, drained, strongly saline, 0 to 2 percent slopes—Aquic Duric Haploxerolls, fine-loamy, mixed, mesic—5 percent
• Inclusion 2: Sonoma silty clay loam, drained, strongly saline, 0 to 2 percent slopes, occasionally flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Rose Creek Soil

Position on landscape: Stream terraces
Parent material: Kind—colluvium; source—dominantly from volcanic rock
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, seepweed, inland saltgrass

Typical Profile

0 to 10 inches—silt loam; platy structure; hard, firm; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 60 inches or more—stratified very fine sandy loam to gravelly sand; 5 to 15 percent cobbles and stones and pebbles (by weight); platy structure; hard, firm; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: February through May—48 to 72 inches; rest of year—below 72 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—moderate
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly lower areas on stream terraces
Contrasting features: Stratified fine sandy loam to silty clay
Distinctive present vegetation: Black greasewood, inland saltgrass
Inclusion 2
Position on landscape: Small irregularly shaped areas on the outer margin of stream terraces
Contrasting features: Occasionally flooded
Distinctive present vegetation: Black greasewood, basin wildrye
Inclusion 3
Position on landscape: Alluvial flats along the margin of steam terraces
Contrasting features: Strongly sodium-affected surface layer
Distinctive present vegetation: Black greasewood, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy, excess salt
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: VIs, irrigated, and VIIs, nonirrigated
Range site: 024X007N

882—Rose Creek silty clay loam

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Rose Creek silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, coarse-loamy, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Humboldt silty clay loam, moderately saline, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine, montmorillonitic (calcareous), mesic—5 percent
• Inclusion 2: Paranat silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—3 percent
• Inclusion 3: Sonoma silty clay loam, 0 to 2 percent slopes, frequently flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—2 percent

Characteristics of the Rose Creek Soil

Position on landscape: Flood plains adjacent to stream channels
Parent material: Kind—alluvium; source—dominantly volcanic rock
Slope features: Length—long; shape—smooth
Dominant present vegetation: Willow, spikerush, sedge, rush, creeping wildrye, inland saltgrass

Typical Profile

0 to 10 inches—silty clay loam; platy structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
10 to 60 inches or more—stratified silt loam to gravelly sand; 5 to 30 percent cobbles and stones and pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-4, A-2

Soil and Water Features

Depth to seasonal high water table: February through June—18 to 36 inches; rest of year—below 36 inches
Flooding: Frequency—frequent; duration—brief or long; months—December through June
Permeability: Moderately rapid
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Small, irregularly shaped depressional areas of flood plains
Contrasting features: Clayey throughout the profile
Distinctive present vegetation: Sedge
Inclusion 2
Position on landscape: Small, irregularly shaped slightly lower areas of flood plains
Contrasting features: Silt loam throughout the profile
Distinctive present vegetation: Sedge
Inclusion 3
Position on landscape: Along the outer margin of flood plains
Contrasting features: Silt loam throughout the profile; a thin, light colored surface layer
Distinctive present vegetation: Sedge

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—good; shallow water areas—good

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Fair—excess salt
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave, wetness
Local roads and streets: Severe—frost action, flooding
Roadfill: Fair—wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, wetness
Drainage: Flooding, frost action, cutbanks cave
Irrigation: Wetness, erodes easily, flooding
Terraces and diversions: Erodes easily, wetness, too sandy

Interpretive Groups

Capability classification: IIIw, irrigated, and Vw, nonirrigated
Range site: 025X001N

883—Rose Creek-Paranat silty clay loams

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Rose Creek silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, coarse-loamy, mixed, mesic—55 percent
• Paranat silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Humboldt silty clay loam, moderately saline, 0 to 2 percent slopes—(Fluvaquentic Haplaquolls, fine, montmorillonitic (calcareous), mesic—5 percent
• Inclusion 2: Sonoma silty clay loam, 0 to 2 percent slopes, frequently flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Rose Creek Soil

Position on landscape: Adjacent to channels on flood plains
Parent material: Kind—alluvium; source—dominantly volcanic rock
Slope features: Length—short; shape—smooth
Dominant present vegetation: Willow, spikerush, sedge, rush, creeping wildrye, saltgrass

Typical Profile

0 to 10 inches—silty clay loam; platy structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated

Unified classification—CL; estimated AASHTO classification—A-6, A-7

10 to 60 inches or more—stratified silt loam to gravelly sand; 5 to 30 percent cobbles and stones and pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-4, A-2

Soil and Water Features

Depth to seasonal high water table: February through June—18 to 36 inches; rest of year—below 36 inches

Flooding: Frequency—frequent; duration—brief or long; months—February through June

Permeability: Moderately rapid

Available water capacity: 8.4 to 9.6 inches

Water-supplying capacity: 7 inches

Runoff: Very slow

Hydrologic group: B

Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—7

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—moderate

Potential frost action: High

Characteristics of the Paranat Soil

Position on landscape: Depressional areas on flood plains

Parent material: Silty mixed alluvium influenced by loess

Slope features: Length—short; shape—slightly concave

Dominant present vegetation: Willow, spikerush, sedge, rush, creeping wildrye, inland saltgrass

Typical Profile

0 to 20 inches—silty clay loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.5); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-6, A-7

20 to 48 inches—stratified silty clay loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-6, A-7

48 to 60 inches or more—stratified very fine sandy loam to silty clay; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: November through June—18 to 42 inches; rest of year—below 42 inches

Flooding: Frequency—frequent; duration—brief or long; months—December through June

Permeability: Moderately slow

Available water capacity: 11.5 to 13.0 inches

Water-supplying capacity: 12 inches

Runoff: Very slow

Hydrologic group: C

Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low

Potential frost action: High

Contrasting Inclusions

Inclusion 1

Position on landscape: Backwater areas of flood plains

Contrasting features: Clayey throughout the profile

Distinctive present vegetation: Sedge

Inclusion 2

Position on landscape: Small irregularly shaped areas on the outer margin of flood plains

Contrasting features: Thin, light colored surface layer

Distinctive present vegetation: Sedge

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:

Suitability of the Rose Creek soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—good; shallow water areas—good

Suitability of the Paranat soil for named elements: Grain and seed crops (irrigated)—very poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—good; shallow water areas—good

Ratings and Restrictive Features of the Rose Creek Soil for Selected Uses and Practices

Range seeding: Fair—excess salt

Daily cover for landfill: Poor—too sandy

Shallow excavations: Severe—cutbanks cave, wetness
Local roads and streets: Severe—frost action, flooding
Roadfill: Fair—wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, wetness
Drainage: Flooding, frost action, cutbanks cave
Irrigation: Wetness, erodes easily, flooding
Terraces and diversions: Erodes easily, wetness, too sandy

Ratings and Restrictive Features of the Paranat Soil for Selected Uses and Practices
Range seeding: Fair—excess salt
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, wetness
Drainage: Flooding, frost action
Irrigation: Wetness, erodes easily, flooding
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: Rose Creek soil—IIIw, irrigated, and Vw, nonirrigated; Paranat soil—Vw, irrigated, and Vw, nonirrigated
Range site: Rose Creek soil—025X001N; Paranat soil—025X001N

891—Rosney loam, cemented substratum

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,500 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Rosney loam, cemented substratum, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—90 percent

Contrasting inclusions:
• Inclusion 1: Reese silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—3 percent
• Inclusion 3: Bubus very fine sand, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—2 percent

Characteristics of the Rosney Soil

Position on landscape: Alluvial flat remnants
Parent material: Loess capped mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, seepweed, basin wildrye, inland saltgrass

Typical Profile

0 to 9 inches—loam; platy structure; slightly hard, very friable; very strongly alkaline (pH 9.2); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4
9 to 50 inches—silty clay loam, silt loam; massive; slightly hard, friable; very strongly alkaline (pH 9.6); strongly saline (30 to 50 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
50 to 60 inches or more—strongly cemented duripan

Soil and Water Features

Depth to hardpan: 50 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 10.0 to 11.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—3; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Stream terraces adjacent to alluvial flats

Contrasting features: Somewhat poorly drained
Distinctive present vegetation: Black greasewood

Inclusion 2
Position on landscape: Lower areas of alluvial flat remnants
Contrasting features: Moderately well drained
Distinctive present vegetation: Shadscale, bud sagebrush, black greasewood

Inclusion 3
Position on landscape: Slightly higher areas of alluvial flat remnants
Contrasting features: Fine sandy loam throughout the profile
Distinctive present vegetation: Shadscale, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native hayland and pasture
Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—cemented pan, thin layer
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—cemented pan
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Excess salt, excess sodium, erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: VIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

892—Rosney silt loam

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,500 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Rosney silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Landco silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty over clayey, mixed (calcareous), mesic—5 percent
• Inclusion 3: Yipor silt loam, moderately saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Rosney Soil

Position on landscape: Alluvial flat remnants
Parent material: Thin loess mantle capping silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, seepweed, saltbush, shadscale, inland saltgrass

Typical Profile

0 to 7 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
7 to 25 inches—silt loam; massive; slightly hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 40 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL-ML, A-4; estimated AASHTO classification—A-4
25 to 60 inches or more—stratified silt loam to silty clay; massive; slightly hard, friable; strongly alkaline (pH 9.0); strongly saline (40 to 60 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 10.2 to 11.4 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.64; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower areas of alluvial flat remnants
Contrasting features: Moderately well drained
Distinctive present vegetation: Shadscale, black greasewood, bud sagebrush
Inclusion 2
Position on landscape: Alluvial flats
Contrasting features: Clayey substratum
Distinctive present vegetation: Saltbush, alkali sacaton, black greasewood
Inclusion 3
Position on landscape: Lower margins of fan skirts adjacent to alluvial flats
Contrasting features: Silt loam throughout the profile
Distinctive present vegetation: Shadscale, black greasewood, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland
Potential uses: Rangeland, wildlife habitat, irrigated cropland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Erodes easily, excess sodium, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: VIs, irrigated, and VIIs, nonirrigated
Range site: 024X012N

970—Soolake very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 4,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Soolake very fine sandy loam, 0 to 2 percent slopes—Typic Torriorthents, sandy, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—3 percent
• Inclusion 3: Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—2 percent

Characteristics of the Soolake Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, bud sagebrush

Typical Profile

0 to 13 inches—very fine sandy loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified

classification—ML; estimated AASHTO classification—A-4

13 to 22 inches—fine sandy loam, very fine sandy loam; massive; soft, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-4

22 to 60 inches or more—stratified loamy fine sand to sand; 5 to 15 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 5.4 to 7.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity to steel: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper parts of fan skirts
Contrasting features: Nonsaline surface layer, loamy throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Lower alluvial flat remnants adjacent to fan skirts
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Black greasewood, shadscale

Inclusion 3
Position on landscape: Higher alluvial flat remnants adjacent to fan skirts
Contrasting features: Loamy throughout the profile
Distinctive present vegetation: Black greasewood, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Droughty
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

971—Soolake very fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,400 to 4,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Soolake very fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, sandy, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Blacka very fine sandy loam, 2 to 4 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—10 percent

Characteristics of the Soolake Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth

Typical Profile

0 to 13 inches—very fine sandy loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

13 to 22 inches—fine sandy loam, very fine sandy loam; massive; soft, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-4

22 to 60 inches or more—stratified loamy fine sand to sand; 5 to 15 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 5.4 to 7.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent fan piedmont remnants
Contrasting features: Strongly cemented duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—very poor

Ratings and Restrictive Features of the Soolake Soil for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Droughty, slope
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: IIIe, irrigated, and VIIs, nonirrigated
Range site: 024X003N

972—Soolake-Dunphy-Argenta association

Map Unit Setting

Position on landscape: Basin floor
Elevation: 4,400 to 4,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Soolake very fine sandy loam, 0 to 2 percent slopes—Typic Torriorthents, sandy, mixed, mesic—40 percent
• Dunphy very fine sandy loam, 0 to 2 percent slopes—Aeric Halaquepts, coarse-loamy, mixed (calcareous), mesic—30 percent
• Argenta fine sandy loam, 0 to 2 percent slopes—Aeric Halaquepts, coarse-loamy, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Wendane silt loam, 0 to 2 percent slopes, frequently flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Goldrun fine sand, 0 to 4 percent slopes—Xeric Torripsamments, mixed, mesic—5 percent

Characteristics of the Soolake Soil

Position on landscape: Fan skirts near margins of alluvial flat remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth

Dominant present vegetation: Black greasewood, shadscale, bud sagebrush

Typical Profile

0 to 13 inches—very fine sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

13 to 22 inches—fine sandy loam, very fine sandy loam; massive; soft, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-4

22 to 60 inches or more—stratified loamy fine sand to sand; 5 to 15 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 5.4 to 7.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Dunphy Soil

Position on landscape: Alluvial flat remnants
Parent material: Mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, basin wildrye, inland saltgrass

Typical Profile

0 to 6 inches—very fine sandy loam; platy structure; slightly hard, very friable; very strongly alkaline (pH 9.6); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 50 to 65); estimated Unified classification—ML; estimated AASHTO classification—A-4

6 to 54 inches—very fine sandy loam, fine sandy loam; massive; slightly hard, very friable; very strongly alkaline (pH 9.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

54 to 60 inches or more—strongly cemented duripan; massive; very hard, very firm

Soil and Water Features

Depth to hardpan: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 5.7 to 6.8 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Argenta Soil

Position on landscape: Alluvial flats
Parent material: Kind—alluvium; source—volcanic rock
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, basin wildrye, inland saltgrass

Typical Profile

0 to 7 inches—fine sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (16 to 25 mmhos/cm); strongly sodic (SAR 50 to 65); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

7 to 45 inches—stratified fine sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 25 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4

45 to 60 inches or more—gravelly sandy loam; 35 to 45 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: February through July—32 to 40 inches; rest of year—below 40 inches
Frequency of flooding: Rare

Permeability: Moderate
Available water capacity: 6.5 to 9.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Channeled areas of alluvial flats
Contrasting features: Frequently flooded
Distinctive present vegetation: Black greasewood, basin wildrye, alkali sacaton
Inclusion 2
Position on landscape: Sand dunes overplacing alluvial flats
Contrasting features: Sandy throughout the profile
Distinctive present vegetation: Basin big sagebrush, needleandthread

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Soolake soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Dunphy soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Argenta soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Soolake Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, piping

Ratings of the Dunphy Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Fair—thin layer
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage, cemented pan
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings of the Argenta Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess sodium, excess salt

Interpretive Groups

Capability classification: Soolake soil—IIIs, irrigated, and VIIs, nonirrigated; Dunphy soil—VIIs, nonirrigated; Argenta soil—VIw, irrigated, and VIIw, nonirrigated
Range site: Soolake soil—024X003N; Dunphy soil—024X011N; Argenta soil—024X011N

980—Sombrero very fine sandy loam

Map Unit Setting

Position on landscape: Basin floor
Elevation: 4,400 to 4,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Sombrero very fine sandy loam, 0 to 2 percent slopes—Aquentic Durorthids, loamy, mixed, mesic, shallow—90 percent
Contrasting inclusions:
• Inclusion 1: Duffer very fine sandy loam, 0 to 2 percent slopes—Aquic Calciorthids, fine-silty, carbonatic, mesic—4 percent
• Inclusion 2: Reese silt loam, 0 to 2 percent slopes—

Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic—3 percent
• Inclusion 3: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—3 percent

Characteristics of the Sombrero Soil

Position on landscape: Stream terraces
Parent material: Loess capped, loamy mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, littleleaf horsebrush, rubber rabbitbrush, basin wildrye

Typical Profile

0 to 4 inches—very fine sandy loam; prismatic structure; slightly hard, very friable; very strongly alkaline (pH 9.2); strongly saline (30 to 50 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—ML; estimated AASHTO classification—A-4
4 to 16 inches—silt loam, silty clay loam; platy structure; hard, friable; strongly alkaline (pH 9.0); strongly saline (30 to 40 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL; estimated AASHTO classification—A-6
16 to 42 inches—strongly cemented duripan; massive; very hard, very firm
42 to 60 inches or more—stratified loam to gravelly sand; 10 to 45 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 9.0); moderately to strongly saline (8 to 20 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—SM, ML, GM; estimated AASHTO classification—A-2, A-4

Soil and Water Features

Depth to hardpan: 15 to 20 inches
Depth to seasonal high water table: March through June—36 to 60 inches; rest of year—below 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.9 to 3.2 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flat remnants
Contrasting features: Very deep
Distinctive present vegetation: Iodinebush
Inclusion 2
Position on landscape: Smooth flood plains
Contrasting features: Lacks duripan
Distinctive present vegetation: Black greasewood
Inclusion 3
Position on landscape: Alluvial flats
Contrasting features: Very deep
Distinctive present vegetation: Black greasewood, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—cemented pan, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, excess salt
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Cemented pan, erodes easily, excess salt
Terraces and diversions: Cemented pan, erodes easily, too sandy

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X007N

990—Sonoma silt loam, drained

Map Unit Setting

Position on landscape: Flood plains

Elevation: 4,500 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Sonoma silt loam, drained, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Sonoma silt loam, slightly saline, 0 to 2 percent slopes, occasionally flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—9 percent
• Inclusion 2: Fluvaquentic Haplaquolls, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—6 percent

Characteristics of the Sonoma Soil

Position on landscape: Channeled and gullied flood plain remnants
Parent material: Silty mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Basin big sagebrush, rubber rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—silt loam; subangular blocky structure; hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—CL; estimated AASHTO classification—A-6
8 to 60 inches or more—stratified silty clay loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Flood plains and backwater channels
Contrasting features: Occasionally flooded
Distinctive present vegetation: Basin wildrye, black greasewood, basin big sagebrush
Inclusion 2
Position on landscape: Smooth to concave, active flood plains near channels
Contrasting features: Frequently flooded
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—good; shallow water areas—good

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Fair—too clayey
Shallow excavations: Slight
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Moderate—piping
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 025X003N

991—Sonoma silt loam, drained, slightly saline

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,900 feet
Average annual precipitation: About 7 inches

Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Sonoma silt loam, drained, slightly saline, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Paranat silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—10 percent
• Inclusion 2: Soolake very fine sandy loam, 0 to 2 percent slopes—Typic Torriorthents, sandy, mixed, mesic—3 percent
• Inclusion 3: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—2 percent

Characteristics of the Sonoma Soil

Position on landscape: Channeled and gullied flood plain remnants
Parent material: Silty mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Basin wildrye, inland saltgrass

Typical Profile

0 to 8 inches—silt loam; subangular blocky structure; hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 60 inches or more—stratified silty clay loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 15 to 30); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Small, irregularly shaped slightly lower areas on active flood plains
Contrasting features: Thick, dark colored surface layer, poorly drained
Distinctive present vegetation: Sedge
Inclusion 2
Position on landscape: Fanlettes from adjacent fan piedmonts
Contrasting features: Sandy throughout the profile
Distinctive present vegetation: Bud sagebrush, black greasewood, rabbitbrush
Inclusion 3
Position on landscape: Alluvial flats adjacent to flood plains
Contrasting features: Somewhat poorly drained
Distinctive present vegetation: Basin wildrye, black greasewood, alkali sacaton

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—fair; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—excess salt
Shallow excavations: Slight
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIs, irrigated, and VIIs, nonirrigated
Range site: 024X007N

992—Sonoma silt loam, strongly saline, rarely flooded

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Sonoma silt loam, strongly saline, 0 to 2 percent slopes, rarely flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Paranat silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—3 percent
• Inclusion 2: Soolake very fine sandy loam, 0 to 2 percent slopes—Typic Torriorthents, sandy, mixed, mesic—3 percent
• Inclusion 3: Rixie silty clay loam, 0 to 2 percent slopes—Aquic Duric Haploxerolls, fine-loamy, mixed, mesic—2 percent
• Inclusion 4: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—2 percent

Characteristics of the Sonoma Soil

Position on landscape: Flood plains
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, pepperweed, inland saltgrass, basin wildrye

Typical Profile

0 to 8 inches—silt loam; subangular blocky structure; hard, friable; very strongly alkaline (pH 9.4); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
8 to 60 inches or more—stratified silty clay loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Small, irregularly shaped slightly lower areas of flood plains
Contrasting features: Frequently flooded, poorly drained
Distinctive present vegetation: Basin wildrye, creeping wildrye, willows
Inclusion 2
Position on landscape: Fanlettes from adjacent fan piedmonts
Contrasting features: Sandy throughout the profile
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 3
Position on landscape: Lower areas of flood plains
Contrasting features: Frequently flooded
Distinctive present vegetation: Sedge
Inclusion 4
Position on landscape: Adjacent alluvial flats
Contrasting features: Somewhat poorly drained
Distinctive present vegetation: Black greasewood, basin wildrye, rubber rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—good

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—excess salt
Shallow excavations: Slight
Local roads and streets: Severe—low strength, frost action

Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: VIs, irrigated, and VIIs, nonirrigated
Range site: 024X007N

993—Sonoma silty clay loam, frequently flooded

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Sonoma silty clay loam, 0 to 2 percent slopes, frequently flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Humboldt silty clay, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine, montmorillonitic (calcareous), mesic—5 percent
• Inclusion 2: Paranat silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Rose Creek silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Sonoma Soil

Position on landscape: Flood plains
Parent material: Silty mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Basin wildrye, inland saltgrass

Typical Profile

0 to 8 inches—silty clay loam; subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 8); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
8 to 65 inches or more—stratified silty clay loam to silt loam; massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through June—18 to 36 inches; rest of year—below 36 inches
Flooding: Frequency—frequent; duration—brief or long; months—December through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave channels and depressions of flood plains
Contrasting features: Thick, dark colored surface layer, clayey throughout profile
Distinctive present vegetation: Basin wildrye, creeping wildrye
Inclusion 2
Position on landscape: Small, irregularly shaped slightly lower areas on flood plains
Contrasting features: Thick, dark colored surface layer
Distinctive present vegetation: Basin wildrye, creeping wildrye
Inclusion 3
Position on landscape: Small irregularly shaped areas adjacent to flood plain channels
Contrasting features: Thick, dark colored surface layer; sandy loam throughout the profile
Distinctive present vegetation: Basin wildrye, creeping wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops

(irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—good; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—excess salt
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness
Drainage: Flooding, percs slowly, frost action
Irrigation: Wetness, erodes easily
Terraces and diversions: Wetness, erodes easily

Interpretive Groups

Capability classification: IIIw, irrigated, and VIw, nonirrigated
Range site: 025X001N

994—Sonoma silty clay loam, drained, strongly saline, occasionally flooded

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Sonoma silty clay loam, drained, strongly saline, 0 to 2 percent slopes, occasionally flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Prida silt loam, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 2: Soolake very fine sandy loam, 0 to 2 percent slopes—Typic Torriorthents, sandy, mixed, mesic—4 percent
• Inclusion 3: Rixie silty clay loam, strongly saline, 0 to 2 percent slopes—Aquic Duric Haploxerolls, fine-loamy, mixed, mesic—4 percent
• Inclusion 4: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—3 percent

Characteristics of the Sonoma Soil

Position on landscape: Channeled and gullied flood plain remnants
Parent material: Silty mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, inland saltgrass, basin wildrye

Typical Profile

0 to 8 inches—silty clay loam; subangular blocky structure; hard, friable; very strongly alkaline (pH 9.4); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7
8 to 60 inches or more—stratified silty clay loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: December through May—42 to 60 inches; rest of year—below 60 inches
Flooding: Frequency—occasional; duration—brief; months—March through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flat remnants adjacent to flood plains
Contrasting features: Weakly silica-cemented layer in the substratum
Distinctive present vegetation: Iodinebush, alkali sacaton
Inclusion 2
Position on landscape: Fanlettes from adjacent fan piedmonts
Contrasting features: Sandy throughout the profile

Distinctive present vegetation: Shadscale, black greasewood

Inclusion 3

Position on landscape: Depressional areas on flood plains
Contrasting features: Thick, dark colored surface layer
Distinctive present vegetation: Alkali cordgrass, sedge

Inclusion 4

Position on landscape: Alluvial flats adjacent to flood plains
Contrasting features: Somewhat poorly drained
Distinctive present vegetation: Black greasewood, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:

Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—good

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt, flooding
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X007N

995—Sonoma silty clay loam, strongly saline, occasionally flooded

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:

• Sonoma silty clay loam, strongly saline, 0 to 2 percent slopes, occasionally flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—90 percent

Contrasting inclusions:

• Inclusion 1: Paranat silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Prida silt loam, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—3 percent
• Inclusion 3: Rixie silty clay loam, strongly saline, 0 to 2 percent slopes—Aquic Duric Haploxerolls, fine-loamy, mixed, mesic—2 percent

Characteristics of the Sonoma Soil

Position on landscape: Flood plains
Parent material: Silty mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Alkali sacaton, inland saltgrass, basin wildrye, iodinebush

Typical Profile

0 to 8 inches—silty clay loam; subangular blocky structure; hard, friable; strongly alkaline (pH 9.0); strongly saline (25 to 50 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

8 to 60 inches or more—silty clay loam, silt loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through June—18 to 36 inches; rest of year—below 36 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C

Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Small, irregularly shaped slightly lower areas on flood plains
Contrasting features: Frequently flooded
Distinctive present vegetation: Sedge
Inclusion 2
Position on landscape: Alluvial flat remnants adjacent to flood plains
Contrasting features: Rarely flooded
Distinctive present vegetation: Iodinebush, alkali sacaton
Inclusion 3
Position on landscape: Slightly higher areas on flood plains
Contrasting features: Weakly silica-cemented strata in the subsoil
Distinctive present vegetation: Sedge, alkali cordgrass

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, wetness
Drainage: Percs slowly, flooding, frost action
Irrigation: Wetness, percs slowly, erodes easily
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X009N

996—Sonoma, strongly saline-Sonoma complex

Map Unit Setting

Position on landscape: Basin floors
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Sonoma silty clay loam, strongly saline, 0 to 2 percent slopes, frequently flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—60 percent
• Sonoma silty clay, slightly saline, 0 to 2 percent slopes, frequently flooded—Aeric Fluvaqents, fine-silty, mixed (calcareous), mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Aquic Durorthidic Torriorthents, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty over clayey, mixed (calcareous), mesic—5 percent
• Inclusion 2: Ocala silt loam, 0 to 2 percent slopes, rarely flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Sonoma, Strongly Saline, Soil

Position on landscape: Irregularly shaped basin floor remnants at a distance from springs and seeps
Parent material: Silty mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye

Typical Profile

0 to 12 inches—silty clay loam; subangular blocky structure; slightly hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 50 to 80); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
12 to 60 inches or more—silty clay loam, silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: 18 to 36 inches
Flooding: Frequency—frequent; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Characteristics of the Sonoma Soil

Position on landscape: Basin floor remnants close to springs and seeps
Parent material: Silty mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Inland saltgrass, sedge, alkali sacaton

Typical Profile

0 to 12 inches—silty clay; angular blocky structure; hard, friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—MH; estimated AASHTO classification—A-7
12 to 60 inches or more—stratified silty clay loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: 18 to 36 inches
Flooding: Frequency—frequent; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Irregularly shaped, lower lake plain terraces
Contrasting features: Clayey substratum
Distinctive present vegetation: Black greasewood, basin wildrye
Inclusion 2
Position on landscape: Coppice dune areas on low lake plain terraces
Contrasting features: Water table fluctuates to below 40 inches in summer and fall
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland, irrigated cropland

Wildlife habitat elements:
Suitability of the Sonoma, strongly saline, soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair
Suitability of the Sonoma soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—fair

Ratings and Restrictive Features of the Sonoma, Strongly Saline, Soil for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Fair—wetness, too clayey
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, wetness
Drainage: Percs slowly, flooding, frost action
Irrigation: Wetness, percs slowly, erodes easily
Terraces and diversions: Erodes easily, wetness

Ratings and Restrictive Features of the Sonoma Soil for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Fair—wetness, too clayey

Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness
Drainage: Percs slowly, flooding, frost action
Irrigation: Wetness, slow intake, erodes easily
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: Sonoma, strongly saline, soil—VIw, irrigated, and VIIw, nonirrigated; Sonoma soil—IIIw, irrigated, and VIw, nonirrigated
Range site: Sonoma, strongly saline, soil—024X007N; Sonoma soil—024X009N

997—Sonoma silty clay loam, strongly saline, frequently flooded

Map Unit Setting

Position on landscape: Basin floor remnants
Elevation: 5,600 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Sonoma silty clay loam, strongly saline, 0 to 2 percent slopes, frequently flooded—Aeric Fluvaquents, fine-silty mixed (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Gund silt loam, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty over clayey, mixed, nonacid, mesic—5 percent
• Inclusion 2: Ocala silt loam, 0 to 2 percent slopes, rarely flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Sonoma Soil

Position on landscape: Basin floor remnants near springs and seeps
Parent material: Silty mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Basin wildrye, alkali sacaton, black greasewood

Typical Profile

0 to 8 inches—silty clay loam; platy structure; slightly hard, friable; strongly alkaline (pH 9.0); strongly saline (25 to 50 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
8 to 60 inches or more—silty clay loam, silt loam; massive; hard, friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through June—18 to 36 inches; rest of year—below 36 inches
Flooding: Frequency—frequent; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Higher lake plain terraces
Contrasting features: Clayey substratum
Distinctive present vegetation: Basin wildrye, basin big sagebrush, black greasewood
Inclusion 2
Position on landscape: Lower lake plain terraces
Contrasting features: Ponds after high intensity rains
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Fair—too clayey, wetness

Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, wetness
Drainage: Percs slowly, flooding, frost action
Irrigation: Wetness, percs slowly, erodes easily
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X007N

1021—Susie Creek-Millerlux association

Map Unit Setting

Position on landscape: Plateaus
Elevation: 5,500 to 6,500 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 75 days

Composition

Major components:
• Susie Creek silt loam, 2 to 8 percent slopes—Durargidic Argixerolls, fine, montmorillonitic, frigid—60 percent
• Millerlux very cobbly loam, 8 to 15 percent slopes—Lithic Xerollic Haplargids, clayey, montmorillonitic, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Aridic Argixerolls, 8 to 15 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—9 percent
• Inclusion 2: Rock outcrop—3 percent
• Inclusion 3: Chen extremely cobbly loam, 4 to 8 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—3 percent

Characteristics of the Susie Creek Soil

Position on landscape: Summits of plateaus
Parent material: Kind—residuum influenced by loess and volcanic ash; source—basalt and andesite
Slope features: Length—long; shape—slightly concave to slightly convex
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, basin wildrye, bottlebrush squirreltail

Typical Profile

0 to 9 inches—silt loam; 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
9 to 27 inches—silty clay, clay, clay loam; 5 to 15 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH, CL; estimated AASHTO classification—A-7
27 to 42 inches—sandy loam, loam; 5 to 25 percent pebbles (by weight); massive; hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
42 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 27 inches—slow; below this depth—moderate
Available water capacity: 6.2 to 7.9 inches
Water-supplying capacity: 10 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—3; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Millerlux Soil

Position on landscape: Side slopes of plateaus
Parent material: Kind—residuum influenced by volcanic ash; source—basalt and tuffs
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Low sagebrush, bottlebrush squirreltail, Thurber needlegrass, bluebunch wheatgrass
Surface cover: 40 percent cobbles

Typical Profile

0 to 10 inches—very cobbly loam; 25 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm);

nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-6, A-4

10 to 15 inches—clay; 0 to 10 percent cobbles and stones and 0 to 15 percent pebbles (by weight); prismatic structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH; estimated AASHTO classification—A-7

15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.0 to 2.4 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave side slopes of hills adjacent to plateaus
Contrasting features: Bedrock at a depth of 60 to 80 inches
Distinctive present vegetation: Wyoming big sagebrush, basin wildrye

Inclusion 2
Position on landscape: Rimrock along shoulder slopes of plateaus
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Higher crests of foothills adjacent to plateaus
Contrasting features: Bedrock at a depth of 20 to 40 inches
Distinctive present vegetation: Low sagebrush, Idaho fescue

Wildlife habitat elements:
Suitability of the Susie Creek soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Millerlux soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Susie Creek Soil for Selected Uses
Range seeding: Fair—droughty, too arid
Daily cover for landfill: Poor—too clayey, hard to pack
Shallow excavations: Moderate—depth to bedrock, too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too clayey
Pond reservoir areas: Moderate—seepage, depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Millerlux Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock, low strength, shrink-swell
Roadfill: Poor—depth to bedrock, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Susie Creek soil—VIs, nonirrigated; Millerlux soil—VIIs, nonirrigated
Range site: Susie Creek soil—024X014N; Millerlux soil—024X018N

1031—Teman silt loam

Map Unit Setting

Position on landscape: Inset fans and fan skirts
Elevation: 4,500 to 4,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Teman silt loam, 0 to 2 percent slopes—Durixerollic Calciorthids, fine-silty, mixed, mesic—85 percent

Contrasting inclusions:
• Inclusion 1: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—4 percent
• Inclusion 2: Goldrun fine sand, 0 to 4 percent slopes—Xeric Torripsamments, mixed, mesic—4 percent
• Inclusion 3: Landco silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty over clayey, mixed (calcareous), mesic—4 percent
• Inclusion 4: Yipor silt loam, saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—3 percent

Characteristics of the Teman Soil

Position on landscape: Fan skirts and inset fans
Parent material: Kind—silty alluvium high in pyroclastic materials; source—mostly volcanic rock
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, black greasewood, rubber rabbitbrush, basin wildrye

Typical Profile

0 to 8 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-6
8 to 63 inches or more—silt loam, silty clay loam; massive; hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 25 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: High

Contrasting Inclusions

Inclusion 1

Position on landscape: Upper areas on fan skirts
Contrasting features: Coarse-silty throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2

Position on landscape: Sand sheets overplacing parts of fan skirts
Contrasting features: Sandy throughout the profile
Distinctive present vegetation: Basin big sagebrush, Indian ricegrass

Inclusion 3

Position on landscape: Adjacent alluvial flats remnants
Contrasting features: Clayey substratum
Distinctive present vegetation: Saltbush, alkali sacaton

Inclusion 4

Position on landscape: Lower margins of fan skirts adjacent to alluvial flat remnants
Contrasting features: Well drained; saline-sodic surface layer
Distinctive present vegetation: Black greasewood, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:

Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—very poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices

Range seeding: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIs, irrigated, and VIIs, nonirrigated
Range site: 024X006N

1032—Teman silt loam, clayey substratum

Map Unit Setting

Position on landscape: Fan skirts and inset fans
Elevation: 4,500 to 4,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Teman silt loam, clayey substratum, 0 to 2 percent slopes—Durixerollic Calciorthids, fine-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Goldrun fine sand, 0 to 4 percent slopes—Xeric Torripsamments, mixed, mesic—10 percent
• Inclusion 2: Landco silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty over clayey, mixed (calcareous), mesic—3 percent
• Inclusion 3: Duffer very fine sandy loam, 0 to 2 percent slopes—Aquic Calciorthids, fine-silty, carbonatic, mesic—2 percent

Characteristics of the Teman Soil

Position on landscape: Fan skirts and inset fans
Parent material: Kind—silty alluvium high in pyroclastic materials; source—volcanic rock
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, mustards, basin wildrye

Typical Profile

0 to 8 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.9); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-6
8 to 40 inches—silt loam, silty clay loam; massive; hard, friable; strongly alkaline (pH 8.8); strongly saline (16 to 25 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-6
40 to 60 inches or more—silty clay; massive; hard, friable; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—MH; estimated AASHTO classification—A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Sand sheets and dunes overplacing fan skirts
Contrasting features: Sandy throughout the profile
Distinctive present vegetation: Basin big sagebrush, Indian ricegrass
Inclusion 2
Position on landscape: Alluvial flat remnants adjacent to fan skirts
Contrasting features: Clayey substratum at a depth of 20 to 40 inches
Distinctive present vegetation: Saltbush
Inclusion 3
Position on landscape: Adjacent alluvial flats
Contrasting features: Seasonal high water table in spring months
Distinctive present vegetation: Iodinebush, alkali sacaton

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Fair—thin layer
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt

Drainage: Deep to water
Irrigation: Percs slowly, erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: VIs, irrigated, and VIIs, nonirrigated
Range site: 024X006N

1033—Teman silt loam, strongly saline

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,500 to 4,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Teman silt loam, strongly saline, 0 to 2 percent slopes—Durixerollic Calciorthids, fine-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—10 percent
• Inclusion 2: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—3 percent
• Inclusion 3: Landco silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty over clayey, mixed (calcareous), mesic—2 percent

Characteristics of the Teman Soil

Position on landscape: Fan skirts
Parent material: Kind—silty alluvium high in pyroclastics; source—volcanic rock
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, inland saltgrass, basin wildrye

Typical Profile

0 to 8 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-6
8 to 63 inches or more—silt loam, silty clay loam; massive; hard, friable; strongly alkaline (pH 8.8); strongly saline (16 to 25 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flat remnants adjacent to fan skirts
Contrasting features: Lacks layer of lime accumulation
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 2
Position on landscape: Upper parts of fan skirts
Contrasting features: Surface layer not saline-sodic
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Alluvial flat remnants adjacent to lower margins of fan skirts
Contrasting features: Clayey substratum
Distinctive present vegetation: Saltbush, alkali sacaton

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—very poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: VIs, irrigated, and VIIs, nonirrigated
Range site: 024X006N

1040—Tenabo, gravelly-Allor-Tenabo association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,000 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Tenabo gravelly very fine sandy loam, 8 to 15 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—40 percent
• Allor very cobbly loam, 15 to 30 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—25 percent
• Tenabo very cobbly loam, 4 to 15 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Typic Haplargids, 15 to 30 percent slopes—Typic Haplargids, fine, montmorillonitic, mesic—8 percent
• Inclusion 2: Durixerollic Camborthids, 2 to 8 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—7 percent

Characteristics of the Tenabo, Gravelly, Soil

Position on landscape: South-facing side slopes of fan piedmont remnants
Parent material: Thin loess mantle influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, spiny hopsage, Indian ricegrass

Typical Profile

0 to 6 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2
6 to 18 inches—clay loam, gravelly clay loam, silty clay loam; 10 to 30 percent pebbles (by weight); prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (2 to 4 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
18 to 40 inches—indurated duripan; massive; extremely hard, extremely firm
40 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sand; 5 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); single grained; loose; very strongly alkaline (pH 9.2); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 15 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.2 to 3.6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—4
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Allor Soil

Position on landscape: North-facing side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bluegrass

Typical Profile

0 to 12 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 55 percent pebbles

(by weight); subangular blocky structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-2, A-4

12 to 34 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-6, A-7

34 to 60 inches or more—gravelly loamy sand, very gravelly loamy sand; 0 to 10 percent cobbles and stones and 35 to 55 percent pebbles (by weight); massive; very hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.7 to 6.0 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Tenabo Soil

Position on landscape: Summits and shoulder slopes of fan piedmont remnants
Parent material: Thin loess mantle influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, spiny hopsage, bud sagebrush, bluegrass

Typical Profile

0 to 6 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

6 to 18 inches—clay loam, sandy clay loam; 5 to 15 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline (2 to 4 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL; estimated AASHTO classification—A-6

18 to 40 inches—indurated duripan; massive; extremely hard, extremely firm

40 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sand; 10 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); single grained; loose; very strongly alkaline (pH 9.2); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 15 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.3 to 2.9 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Convex, north-facing side slopes of fan piedmont remnants
Contrasting features: Clayey subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2

Position on landscape: Inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, pine bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:

Suitability of the Tenabo, gravelly, soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Allor soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Suitability of the Tenabo soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Tenabo, Gravelly, Soil for Selected Uses
Range seeding: Poor—too arid, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—cemented pan, seepage, slope
Embankments, dikes, and levees: Severe—seepage

Ratings of the Allor Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Fair—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage

Ratings of the Tenabo Soil for Selected Uses
Range seeding: Poor—too arid, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan, seepage, slope
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Tenabo, gravelly, soil—IVe, irrigated, and VIIs, nonirrigated; Allor soil—VIIs, nonirrigated; Tenabo soil—VIIs, nonirrigated
Range site: Tenabo, gravelly, soil—024X002N; Allor soil—024X005N; Tenabo soil—024X002N

1041—Tenabo-Ricert association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,800 to 6,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Tenabo silt loam, 0 to 4 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—60 percent
• Ricert gravelly silt loam, 2 to 4 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Whirlo gravelly loam, 4 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Durorthidic Torriorthents, 4 to 8 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Creemon silt loam, 2 to 4 percent slope—Duric Camborthids, coarse-silty, mixed, mesic—5 percent

Characteristics of the Tenabo Soil

Position on landscape: Higher summits of fan piedmont remnants
Parent material: Thin loess mantle high in volcanic ash over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 13 inches—silt loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 20 inches—clay loam, gravelly clay loam, silty clay loam; 5 to 30 percent pebbles (by weight); prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (2 to 4 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
20 to 39 inches—indurated duripan; massive; extremely hard, extremely firm
39 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sand; 5 to 25 percent cobbles and stones and 35 to 65 percent pebbles (by weight); single grained; loose; very

strongly alkaline (pH 9.2); slightly saline to moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 9 to 20 inches
Depth to seasonal high water table: More than 20 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.8 to 4.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Ricert Soil

Position on landscape: Lower summits of fan piedmont remnants
Parent material: Thin loess deposits over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 6 inches—gravelly silt loam; 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4

6 to 18 inches—loam, clay loam; 0 to 15 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.5); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

18 to 60 inches or more—very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand; 0 to 15 percent cobbles and stones and 50 to 80 percent pebbles (by weight); massive; very hard, very firm; strongly alkaline (pH 8.8); nonsaline to slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 18 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 4.4 to 6.5 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan aprons overplacing fan piedmont remnants
Contrasting features: Very gravelly throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Inset fans
Contrasting features: Lacks layer of clay accumulation
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Adjacent fan skirts
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, homesites

Wildlife habitat elements:
Suitability of the Tenabo soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Ricert soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Tenabo Soil for Selected Uses
Range seeding: Poor—too arid, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones

Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—excess sodium, excess salt, seepage

Ratings of the Ricert Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Interpretive Groups

Capability classification: Tenabo soil—IVe, irrigated, and VIIs, nonirrigated; Ricert soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Tenabo soil—024X002N; Ricert soil—024X002N

1042—Tenabo very gravelly loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,400 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Tenabo very gravelly loam, 2 to 8 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—85 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 15 to 30 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Golconda very gravelly silt loam, 2 to 8 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—5 percent
• Inclusion 3: Doowak very loamy sand, 2 to 4 percent slopes—Xeric Torriorthents, sandy-skeletal, mixed, mesic—3 percent
• Inclusion 4: Cumulic Haploxerolls, 0 to 4 percent slopes—Cumulic Haploxerolls, loamy-skeletal, mixed, mesic—2 percent

Characteristics of the Tenabo Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Thin loess mantle high in volcanic ash over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Bud sagebrush, shadscale, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-1
6 to 18 inches—clay loam, gravelly clay loam, silty clay loam; 10 to 30 percent pebbles (by weight); prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (2 to 4 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
18 to 40 inches—indurated duripan; massive; extremely hard, extremely firm
40 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sand; 5 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); single grained; loose; very strongly alkaline (pH 9.2); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 15 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.2 to 3.6 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Side slopes of fan piedmont remnants
Contrasting features: Very deep soil that lacks a duripan
Distinctive present vegetation: Big sagebrush, Thurber needlegrass
Inclusion 2
Position on landscape: Lower summits of fan piedmont remnants
Contrasting features: Strongly cemented duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Inset fans
Contrasting features: Very deep soil that receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 4
Position on landscape: Adjacent to channels of inset fans, near the mountain front
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings for Selected Uses
Range seeding: Poor—too arid, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—excess sodium, seepage, excess salt

Interpretive Groups

Capability classification: IVe, irrigated, and VIIs, nonirrigated
Range site: 024X002N

1062—Tomera-Snapp-Whirlo association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,000 to 5,600 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Tomera gravelly loam, 8 to 15 percent slopes—Xerollic Natrargids, fine, montmorillonitic, mesic—50 percent
• Snapp gravelly very fine sandy loam, 4 to 8 percent slopes—Durixerollic Natrargids, clayey over sandy or sandy-skeletal, montmorillonitic, mesic—20 percent
• Whirlo gravelly sandy loam, 4 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Aridic Haploxerolls, 4 to 8 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, mesic—10 percent
• Inclusion 2: Xeric Torriorthents, 4 to 8 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Tomera Soil

Position on landscape: Upper fan piedmont remnants
Parent material: Kind—alluvium high in pyroclastic materials; source—mixed sedimentary rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass

Typical Profile

0 to 8 inches—gravelly loam; 25 to 50 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, GM, SM-SC, GM-GC; estimated AASHTO classification—A-2, A-4
8 to 33 inches—gravelly sandy clay, gravelly clay; 25 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; strongly alkaline (pH 8.8); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 15 to 30); estimated Unified classification—CH, SC; estimated AASHTO classification—A-7
33 to 60 inches or more—extremely gravelly sandy loam, very gravelly loamy sand, very cobbly loam; 1 to 40 percent cobbles and stones and 55 to 70 percent pebbles (by weight); massive; soft, very

friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic to moderately sodic (SAR 13 to 30); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 33 inches—slow; below this depth—moderately rapid
Available water capacity: 5.6 to 7.1 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Moderate

Characteristics of the Snapp Soil

Position on landscape: Lower fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass
Surface cover: 45 percent pebbles

Typical Profile

0 to 10 inches—gravelly very fine sandy loam; 25 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2

10 to 30 inches—clay, gravelly clay, gravelly clay loam; 10 to 50 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 9.0); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GC, CH; estimated AASHTO classification—A-7

30 to 60 inches or more—extremely gravelly loamy sand, very gravelly loamy sand; 50 to 85 percent pebbles (by weight); massive; hard, brittle; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, SP-SM, GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 30 inches—slow; below this depth—moderate
Available water capacity: 5.2 to 7.1 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—3; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: Moderate

Characteristics of the Whirlo Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 7 inches—gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4

7 to 13 inches—gravelly sandy loam, gravelly loam, fine sandy loam; 0 to 10 percent cobbles and stones and 15 to 45 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2, A-4

13 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 5 to 30 percent cobbles and stones and 50 to 75 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.9 to 5.3 inches
Water-supplying capacity: 6 inches
Runoff: Slow
Hydrologic group: B

Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan aprons on the upper parts of fan piedmont remnants
Contrasting features: Very stony, thick, dark colored surface layer
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Upper part of inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Tomera soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Snapp soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Tomera Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—hard to pack
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—shrink-swell, low strength
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too clayey, small stones, area reclaim
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Snapp Soil for Selected Uses
Range seeding: Poor—excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Tomera soil—VIs, nonirrigated; Snapp soil—IIIe, irrigated, and VIs, nonirrigated; Whirlo soil—IIIe, irrigated, and VIIc, nonirrigated
Range site: Tomera soil—024X005N; Snapp soil—024X005N; Whirlo soil—024X002N

1080—Trunk-Burrita association

Map Unit Setting

Position on landscape: Foothills
Elevation: 4,800 to 5,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Trunk very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—60 percent
• Burrita very cobbly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Typic Natrargids, 15 to 30 percent slopes—Typic Natrargids, fine, montmorillonitic, mesic—5 percent
• Inclusion 2: Rock outcrop—5 percent
• Inclusion 3: Xerollic Haplargids, 4 to 8 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Trunk Soil

Position on landscape: Side slopes of foothills

Parent material: Kind—colluvium over residuum; source—metasedimentary rocks
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, Indian ricegrass, pine bluegrass

Typical Profile

0 to 5 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 25 to 50 percent pebbles (by weight); granular structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC, GC, SM-SC, GM-GC; estimated AASHTO classification—A-4, A-6
5 to 28 inches—gravelly clay loam, gravelly clay; 0 to 10 percent cobbles and stones and 20 to 50 percent pebbles (by weight); prismatic structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.0 to 3.9 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—Moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Burrita Soil

Position on landscape: Crest and shoulder slopes of foothills
Parent material: Kind—residuum; source—metamorphic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, pine bluegrass, Indian ricegrass, spiny hopsage

Typical Profile

0 to 3 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
3 to 18 inches—very cobbly clay, very stony clay loam, very gravelly clay loam; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7
18 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.5 to 2.0 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave foot slopes of foothills
Contrasting features: 40 to 60 inches deep to bedrock
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Scattered peaks of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Toe slopes of foothills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Trunk Soil for Selected Uses

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—depth to bedrock, low strength, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Burrita Soil for Selected Uses

Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Trunk soil—VIIs, nonirrigated; Burrita soil—VIIs, nonirrigated
Range site: Trunk soil—024X005N; Burrita soil—024X005N

1082—Trunk-Reina association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Trunk loam, 8 to 30 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—50 percent
• Reina loam, 4 to 15 percent slopes—Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic, shallow—35 percent

Contrasting inclusions:
• Inclusion 1: Rock outcrop—10 percent
• Inclusion 2: Rubble land—5 percent

Characteristics of the Trunk Soil

Position on landscape: Lower side slopes of foothills
Parent material: Kind—residuum and colluvium; source—sedimentary and metasedimentary rocks
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, rabbitbrush, bottlebrush squirreltail, Sandberg bluegrass

Typical Profile

0 to 5 inches—loam; 0 to 20 percent pebbles (by weight); granular structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
5 to 28 inches—gravelly clay loam, gravelly clay; 0 to 10 percent cobbles and stones and 20 to 50 percent pebbles (by weight); prismatic structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.0 to 3.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—2; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Reina Soil

Position on landscape: Upper side slopes of foothills
Parent material: Kind—residuum influenced by loess and volcanic ash; source—andesite, basalt, tuff, and quartzite
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush,

rabbitbrush, bluebunch wheatgrass, Thurber needlegrass
Surface cover: 15 percent pebbles

Typical Profile

0 to 7 inches—loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
7 to 18 inches—very gravelly clay, very gravelly clay loam; 10 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); prismatic structure; very hard, firm; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM; estimated AASHTO classification—A-2, A-7
18 to 26 inches—indurated duripan; massive; very hard, firm
26 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 22 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.0 to 2.6 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Rimrock and exposed bedrock on severely eroded side slopes of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Rock stringers below rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reina soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Trunk Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Reina Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—cemented pan, depth to bedrock
Local roads and streets: Severe—cemented pan
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Trunk soil—VIIe, nonirrigated; Reina soil—VIIs, nonirrigated
Range site: Trunk soil—024X005N; Reina soil—024X005N

1084—Trunk-Burrita-Rock outcrop association

Map Unit Setting

Position on landscape: Foothills
Elevation: 4,800 to 5,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Trunk cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—40 percent
• Burrita very cobbly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—25 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 4 to 15 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—5 percent
• Inclusion 2: Xerollic Durargids, 15 to 30 percent slopes—Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic—5 percent
• Inclusion 3: Xeric Torriorthents, 15 to 30 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—4 percent
• Inclusion 4: Typic Torriorthents, 30 to 50 percent slopes—Typic Torriorthents, clayey-skeletal, montmorillonitic (calcareous), mesic—1 percent

Characteristics of the Trunk Soil

Position on landscape: Side slopes of foothills
Parent material: Kind—colluvium and residuum; source—metasedimentary rocks
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, Indian ricegrass, pine bluegrass

Typical Profile

0 to 5 inches—cobbly loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); very gravelly; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
5 to 28 inches—gravelly clay loam, gravelly clay; 0 to 10 percent cobbles and stones and 20 to 50 percent pebbles (by weight); prismatic structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.0 to 3.9 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Burrita Soil

Position on landscape: Crests and shoulder slopes of foothills
Parent material: Kind—residuum; source—metamorphic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, pine bluegrass, Indian ricegrass, spiny hopsage

Typical Profile

0 to 3 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
3 to 18 inches—very cobbly clay, very stony clay loam, very gravelly clay loam; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7
18 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.5 to 2.0 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Rock Outcrop

Position on landscape: Rimrock and eroded side slopes of foothills
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex upper crests of foothills
Contrasting features: Abrupt textural boundary
Distinctive present vegetation: Low sagebrush, bluegrass, Thurber needlegrass
Inclusion 2
Position on landscape: Concave to slightly convex foot slopes of foothills
Contrasting features: A duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Wyoming big sagebrush, pine bluegrass
Inclusion 3
Position on landscape: Side slopes of drainageway
Contrasting features: Soil is more than 40 inches deep
Distinctive present vegetation: Wyoming big sagebrush, bluegrass
Inclusion 4
Position on landscape: Eroded side slopes of foothills
Contrasting features: Surface layer eroded
Distinctive present vegetation: Wyoming big sagebrush, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Trunk Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—depth to bedrock, low strength, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Burrita Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Trunk soil—VIIs, nonirrigated; Burrita soil—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Trunk soil—024X005N; Burrita soil—024X005N

1085—Trunk-Dewar-Stingdorn association

Map Unit Setting

Position on landscape: Foothills and interhill fan piedmont remnants
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Trunk gravelly loam, 15 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—35 percent
• Dewar very cobbly loam, 15 to 50 percent slopes—Xerollic Durargids, loamy, mixed, mesic, shallow—30 percent
• Stingdorn very cobbly loam, 8 to 15 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Abruptic Xerollic Durargids, 15 to 30 percent slopes—Abruptic Xerollic Durargids, fine, montmorillonitic, mesic—6 percent
• Inclusion 2: Xerollic Durorthids, 8 to 30 percent slopes—Xerollic Durorthids, loamy-skeletal, mixed, mesic, shallow—5 percent
• Inclusion 3: Veta very gravelly fine sandy loam, 4 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 4: Rock outcrop—1 percent

Characteristics of the Trunk Soil

Position on landscape: North- and east-facing crests and side slopes of foothills

Parent material: Kind—residuum and colluvium; source—various sedimentary rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail
Surface cover: 15 percent pebbles, 10 percent cobbles

Typical Profile

0 to 5 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); granular structure; slightly hard; friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GC, SM-SC, GM, SM; estimated AASHTO classification—A-4
5 to 28 inches—gravelly clay loam, gravelly clay; 0 to 10 percent cobbles and stones and 20 to 50 percent pebbles (by weight); prismatic structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.0 to 3.9 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—moderate
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Dewar Soil

Position on landscape: Interhill fan piedmont remnants
Parent material: Silty mixed alluvium
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 4 inches—very cobbly loam; 40 to 50 percent cobbles and stones and 20 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
4 to 14 inches—cobbly silty clay loam; 25 to 30 percent cobbles and stones and 10 to 20 percent pebbles (by weight); subangular blocky structure; slightly hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7
14 to 19 inches—very cobbly silty loam; 30 to 40 percent cobbles and stones and 45 to 55 percent pebbles (by weight); subangular blocky structure; slightly hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6
19 to 32 inches—indurated duripan; massive; extremely hard, extremely firm
32 to 60 inches or more—gravelly sandy loam; 40 to 50 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 13 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.0 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Stingdorn Soil

Position on landscape: South- and west-facing summits and shoulder slopes of foothills
Parent material: Kind—residuum; source—rhyolitic bedrock
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 45 percent pebbles

(by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, SC; estimated AASHTO classification—A-2, A-4

7 to 15 inches—very cobbly loam, clay loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-6

15 to 20 inches—indurated duripan; massive; extremely hard, extremely firm

20 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 1.9 inches
Water-supplying capacity: 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Highest part of interhill fan piedmont remnants
Contrasting features: Abrupt textural boundary at top of clayey subsoil
Distinctive present vegetation: Wyoming big sagebrush, bluegrass

Inclusion 2
Position on landscape: Lower south-facing side slopes of foothills
Contrasting features: Very gravelly sandy loam subsoil
Distinctive present vegetation: Wyoming big sagebrush, bluegrass

Inclusion 3
Position on landscape: Adjacent to drainageways and channels of foothills and fan piedmont remnants
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 4
Position on landscape: Scattered peaks of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Dewar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Stingdorn soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Trunk Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—depth to bedrock, low strength, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Dewar Soil for Selected Uses
Range seeding: Poor—large stones, droughty
Daily cover for landfill: Poor—cemented pan, slope
Shallow excavations: Severe—cemented pan, slope
Local roads and streets: Severe—cemented pan, slope
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, cemented pan, slope
Pond reservoir areas: Severe—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—seepage

Ratings of the Stingdorn Soil for Selected Uses
Range seeding: Poor—too arid, droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, large stones
Shallow excavations: Severe—depth to bedrock, cemented pan
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, depth to bedrock, large stones
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Trunk soil—VIIe, nonirrigated; Dewar soil—VIIs, nonirrigated; Stingdorn soil—VIIs, nonirrigated
Range site: Trunk soil—024X005N; Dewar soil—024X005N; Stingdorn soil—024X002N

1086—Trunk-Malpais-Minat association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Trunk cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—45 percent
• Malpais gravelly loam, 30 to 50 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—25 percent
• Minat gravelly loam, 30 to 50 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Oxcorel very fine sandy loam, 4 to 15 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—7 percent
• Inclusion 2: Puett very gravelly loam, 30 to 50 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—6 percent
• Inclusion 3: Durixerollic Haplargids, 8 to 15 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—2 percent

Characteristics of the Trunk Soil

Position on landscape: Crest and shoulder slopes of hills
Parent material: Kind—colluvium over residuum; source—various sedimentary rocks
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 5 inches—cobbly loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); granular structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CL-ML; estimated AASHTO classification—A-4
5 to 28 inches—gravelly clay loam, gravelly clay; 0 to 10 percent cobbles and stones and 20 to 50 percent pebbles (by weight); prismatic structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.0 to 3.9 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Malpais Soil

Position on landscape: South- and west-facing side slopes of hills
Parent material: Kind—colluvium influenced by loess and volcanic ash; source—basalt and andesite
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, shadscale
Surface cover: 15 percent pebbles, 10 percent cobbles and stones

Typical Profile

0 to 3 inches—gravelly loam; 5 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-4
3 to 15 inches—very gravelly loam, very cobbly sandy loam, very gravelly sandy loam; 5 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly

hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

15 to 60 inches or more—stratified extremely cobbly loam to extremely cobbly sandy loam; 40 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.6 to 5.4 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Minat Soil

Position on landscape: North- and east-facing side slopes of hills
Parent material: Kind—colluvium influenced by volcanic ash; source—chert, shale, and volcanic rock
Slope features: Length—long; shape—slightly concave to convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass, phlox, ephedra, small rabbitbrush

Typical Profile

0 to 9 inches—gravelly loam; 5 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-4, A-6

9 to 27 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2

27 to 60 inches or more—very gravelly fine sandy loam, very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.0 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth and slightly convex fan piedmont remnants adjacent to hills
Contrasting features: Clayey, sodium-affected subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Slightly concave to convex back slopes of severely eroded parts of hills
Contrasting features: Soft bedrock within a depth of 20 inches
Distinctive present vegetation: Small rabbitbrush, black sagebrush

Inclusion 3
Position on landscape: Concave to smooth foot slopes adjacent to drainageways
Contrasting features: Very gravelly clay loam subsoil
Distinctive present vegetation: Wyoming big sagebrush, Indian ricegrass, bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Malpais soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Suitability of the Minat soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Trunk Soil for Selected Uses
Range seeding: Fair—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Malpais Soil for Selected Uses
Range seeding: Poor—too arid, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Minat Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Interpretive Groups

Capability classification: Trunk soil—VIIs, nonirrigated; Malpais soil—VIIe, nonirrigated; Minat soil—VIIe, nonirrigated
Range site: Trunk soil—024X005N; Malpais soil—024X026N; Minat soil—024X005N

1087—Trunk-Burrita-Colbar association

Map Unit Setting

Position on landscape: Low hills
Elevation: 5,400 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Trunk very cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—45 percent
• Burrita very cobbly loam, 8 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—25 percent
• Colbar very cobbly loam, 15 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Duric Natrargids, 15 to 30 percent slopes—Duric Natrargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Lithic Xerollic Haplargids, 8 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—5 percent
• Inclusion 3: Xerollic Haplargids, 4 to 15 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 4: Rock outcrop—2 percent

Characteristics of the Trunk Soil

Position on landscape: East-, west-, and south-facing side slopes of low hills
Parent material: Kind—residuum and colluvium; source—metasedimentary rocks
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, bottlebrush squirreltail, Sandberg bluegrass

Typical Profile

0 to 5 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 25 to 50 percent pebbles (by weight); granular structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC, SC, GC; estimated AASHTO classification—A-4, A-6
5 to 28 inches—gravelly clay loam, gravelly clay; 0 to 10 percent cobbles and stones and 20 to 50 percent pebbles (by weight); prismatic structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Burrita Soil

Position on landscape: Crest and shoulder slopes of low hills
Parent material: Kind—residuum; source—metamorphic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 3 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
3 to 18 inches—very cobbly clay, very stony clay loam, very gravelly clay loam; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7
18 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.5 to 2.0 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of low hills
Parent material: Kind—residuum and colluvium; source—andesite and dacite
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, bottlebrush squirreltail, pine bluegrass

Typical Profile

0 to 3 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam, cobbly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8

Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth, lower, south-facing side slopes of low hills
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Convex, north-facing crests and shoulder slopes of low hills
Contrasting features: Calcareous subsoil
Distinctive present vegetation: Black sagebrush, small rabbitbrush
Inclusion 3
Position on landscape: Concave side slopes adjacent to incipient drainageways
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 4
Position on landscape: Occurs randomly as small peaks
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Trunk Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Burrita Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Colbar Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Trunk soil—VIIs, nonirrigated; Burrita soil—VIIs, nonirrigated; Colbar soil—VIIs, nonirrigated
Range site: Trunk soil—024X005N; Burrita soil—024X005N; Colbar soil—024X005N

1091—Tulase silt loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 5,600 to 5,900 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Tulase silt loam, 2 to 8 percent slopes—Durorthidic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 2 to 8 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—10 percent

• Inclusion 2: Xeric Torriorthents, 2 to 8 percent slopes—Xeric Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Tulase Soil

Position on landscape: Slightly dissected fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—silt loam; platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
6 to 60 inches or more—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 12.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent inset fans
Contrasting features: Fine sandy loam layers in the substratum
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Lower margins of fan skirts
Contrasting features: Silty clay loam throughout the profile
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: IIIe, irrigated, and VIc, nonirrigated
Range site: 025X019N

1092—Tulase-Bubus-McConnel association

Map Unit Setting

Position on landscape: Basin floor and piedmont slopes
Elevation: 5,000 to 5,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Tulase silt loam, 2 to 8 percent slopes—Durorthidic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic—40 percent
• Bubus very fine sandy loam, slightly saline, 2 to 4 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—30 percent
• McConnel loam, 0 to 4 percent slopes—Xerollic Camborthids, sandy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Duric Camborthids, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 2: Xeric Torriorthents, 0 to 2 percent slopes—Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Tulase Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by loess and volcanic ash

Slope features: Length—short; shape—slightly concave to slightly convex
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail, small rabbitbrush

Typical Profile

0 to 6 inches—silt loam; platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
6 to 60 inches or more—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 12.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Bubus Soil

Position on landscape: Alluvial flat remnants
Parent material: Mixed alluvium high in pyroclastics
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 60 inches or more—stratified sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); strongly saline (more than 16 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the McConnel Soil

Position on landscape: Offshore bars
Parent material: Mixed alluvium influenced by loess and volcanic ash over lacustrine beach sediments
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Wyoming big sagebrush, Indian ricegrass, small rabbitbrush, pine bluegrass
Surface cover: 20 percent pebbles

Typical Profile

0 to 2 inches—loam; 5 to 15 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
2 to 12 inches—loam, sandy loam, fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
12 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sand; 0 to 15 percent cobbles and stones and 65 to 90 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GP; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None

Permeability: In the upper 12 inches—moderately rapid; below this depth—very rapid
Available water capacity: 3.1 to 4.4 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.37; T value—2; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth inset fans dissecting beach plains
Contrasting features: Layer of weak silica accumulation
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 2
Position on landscape: Concave inset fans dissecting beach plains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Smooth to slightly convex remnants of offshore bars
Contrasting features: Loamy and very gravelly throughout the profile
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Tulase soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bubus soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the McConnel soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Tulase Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Bubus Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings of the McConnel Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—too arid, area reclaim, small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Tulase soil—IIIe, irrigated, and VIc, nonirrigated; Bubus soil—IIc, irrigated, and VIIc, nonirrigated; McConnel soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Tulase soil—024X005N; Bubus soil—024X002N; McConnel soil—024X005N

1102—Tweba very fine sandy loam, drained, 0 to 4 percent slopes

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,800 to 5,100 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Tweba very fine sandy loam, drained, 0 to 4 percent

slopes—Aeric Fluvaquents, coarse-loamy, mixed (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Orovada fine sandy loam, 2 to 4 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Wendane silt loam, 0 to 2 percent slopes, occasionally flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Tweba Soil

Position on landscape: Channeled and gullied flood plain remnants
Parent material: Loamy mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Basin big sagebrush, black greasewood, basin wildrye, rubber rabbitbrush

Typical Profile

0 to 11 inches—very fine sandy loam; platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
11 to 21 inches—fine sandy loam, very fine sandy loam, loam; massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
21 to 60 inches or more—stratified very fine sandy loam to loamy sand; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4

Soil and Water Features

Depth to seasonal high water table: February through June—36 to 42 inches; rest of year—below 42 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 5.6 to 9.2 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Fanlettes from adjacent fan piedmont remnants
Contrasting features: Well drained
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Adjacent alluvial flats
Contrasting features: Strongly salt and sodium affected
Distinctive present vegetation: Black greasewood, halogeton

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland
Potential uses: Rangeland, wildlife habitat, irrigated native pasture and hayland, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—good; shallow water areas—good

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Fair—excess salt
Daily cover for landfill: Fair—too sandy, wetness
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: IIIw, irrigated, and VIw, nonirrigated
Range site: 024X006N

1110—Umberland silty clay loam, ponded

Map Unit Setting

Position on landscape: Lake plains
Elevation: About 5,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Umberland silty clay loam, ponded, 0 to 2 percent slopes—Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Playas—10 percent
• Inclusion 2: Durixerollic Camborthids, 0 to 2 percent slopes—Durixerollic Camborthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Umberland Soil

Position on landscape: Lake plains
Parent material: Silty mixed lacustrine sediments
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Inland saltgrass

Typical Profile

0 to 4 inches—silty clay loam; platy structure; hard, friable; strongly alkaline (pH 9.2); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-7
4 to 60 inches or more—silty clay, silty clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 13 to 25); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

Soil and Water Features

Depth to seasonal high water table: June through December—12 to 30 inches; rest of year—below 30 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 9.0 to 12.5 inches
Water-supplying capacity: 8 inches
Runoff: Ponded
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Sink areas on lake plains
Contrasting features: Ponded too long to support vegetation
Distinctive present vegetation: Barren

Inclusion 2
Position on landscape: Fanlettes from adjacent fan piedmont remnants
Contrasting features: Well drained
Distinctive present vegetation: Basin big sagebrush, rubber rabbitbrush, inland saltgrass, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings for Selected Uses
Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—too clayey, hard to pack, ponding
Shallow excavations: Severe—ponding
Local roads and streets: Severe—low strength, shrink-swell, ponding
Roadfill: Poor—low strength, wetness, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, too clayey, wetness
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—ponding, excess sodium, excess salt

Interpretive Groups

Capability classification: VIIw, nonirrigated
Range site: 026X002N

1140—Wendane silt loam, frequently flooded

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,600 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Wendane silt loam, 0 to 2 percent slopes, frequently flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent

• Inclusion 2: Reese silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Sonoma silty clay loam, 0 to 2 percent slopes, occasionally flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Wendane Soil

Position on landscape: Alluvial flats
Parent material: Mixed silty alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, basin wildrye, alkali rabbitbrush, inland saltgrass

Typical Profile

0 to 13 inches—silt loam; platy structure; slightly hard, very friable; very strongly alkaline (pH 9.6); strongly saline (30 to 50 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 27 inches—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
27 to 65 inches or more—stratified silt loam to clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); slightly to moderately sodic (SAR 20 to 35); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through July—30 to 48 inches; rest of year—below 48 inches
Flooding: Frequency—frequent; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth adjacent fan skirts
Contrasting features: Moderately well drained
Distinctive present vegetation: Black greasewood, shadscale

Inclusion 2
Position on landscape: Slightly higher alluvial flats
Contrasting features: Occasionally flooded
Distinctive present vegetation: Black greasewood

Inclusion 3
Position on landscape: Adjacent flood plain remnants
Contrasting features: Occasionally flooded
Distinctive present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland
Potential uses: Rangeland, wildlife habitat, irrigated native pasture and hayland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—flooding, wetness
Local roads and streets: Severe—flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Flooding, frost action, excess salt
Irrigation: Wetness, erodes easily, flooding
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X007N

1141—Wendane silt loam, sandy substratum

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,400 to 4,600 feet

Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Wendane silt loam, sandy substratum, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Argenta very fine sandy loam, 0 to 2 percent slopes—Aeric Halaquepts, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent
• Inclusion 4: Reese silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic—2 percent

Characteristics of the Wendane Soil

Position on landscape: Alluvial flats
Parent material: Mixed silty alluvium influenced by loess and volcanic ash capping sandy sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, inland saltgrass, alkali sacaton, basin wildrye

Typical Profile

0 to 13 inches—silt loam; platy structure; slightly hard, very friable; very strongly alkaline (pH 9.6); strongly saline (30 to 40 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 40 inches—silt loam, silty clay loam; subangular blocky structure; hard, firm; strongly alkaline (pH 8.8); strongly saline (40 to 60 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4
40 to 60 inches or more—stratified sand to gravelly sand; 15 to 35 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SP-SM, SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: February through July—30 to 48 inches; rest of year—below 47 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through June
Permeability: In the upper 40 inches—moderately slow; below this depth—very rapid
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 9 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—4; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper margins of alluvial flats
Contrasting features: Coarser textured throughout the profile
Distinctive present vegetation: Black greasewood
Inclusion 2
Position on landscape: Alluvial flat remnants
Contrasting features: Moderately well drained
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 3
Position on landscape: Alluvial flat remnants adjacent to fan skirts
Contrasting features: Well drained
Inclusion 4
Position on landscape: Lower margins of alluvial flats
Contrasting features: Water table at a depth of 12 to 18 inches
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland
Potential uses: Rangeland, wildlife habitat, irrigated native pasture and hayland, homesites

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium

Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Fair—wetness
Sand: Probable source
Gravel: Improbable source—too sandy
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium
Drainage: Flooding, frost action, excess salt
Irrigation: Wetness, erodes easily, flooding
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X007N

1142—Wendane-Tweba association

Map Unit Setting

Position on landscape: Alluvial flats and flood plains
Elevation: 4,800 to 5,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Wendane very fine sandy loam, 0 to 2 percent slopes, occasionally flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—55 percent
• Tweba very fine sandy loam, drained, 0 to 4 percent slopes—Aeric Fluvaquents, coarse-loamy, mixed (calcareous), mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 0 to 2 percent slopes—Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic—10 percent

Characteristics of the Wendane Soil

Position on landscape: Alluvial flats
Parent material: Mixed silty alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush

Typical Profile

0 to 13 inches—very fine sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (30 to 50 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
13 to 27 inches—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (25 to 40 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
27 to 60 inches or more—stratified silt loam to clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); slightly to moderately sodic (SAR 20 to 40); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through July—30 to 48 inches; rest of year—below 48 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 10.8 to 12.0 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Characteristics of the Tweba Soil

Position on landscape: Channeled and gullied areas of flood plains
Parent material: Loamy mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye, streambank wheatgrass

Typical Profile

0 to 11 inches—very fine sandy loam; platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
11 to 21 inches—fine sandy loam, very fine sandy loam, loam; massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified

classification—ML; estimated AASHTO classification—A-4

21 to 60 inches or more—stratified very fine sandy loam to loamy sand; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4

Soil and Water Features

Depth to seasonal high water table: February through June—36 to 42 inches; rest of year—below 42 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 5.6 to 9.2 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Fanlettes from adjacent fan skirts
Contrasting features: Silt loam throughout the profile
Distinctive present vegetation: Black greasewood, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Wendane soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair
Suitability of the Tweba soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—poor; shallow water areas—very poor

Ratings of the Wendane Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—flooding, wetness
Local roads and streets: Severe—flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings of the Tweba Soil for Selected Uses
Range seeding: Fair—excess salt
Daily cover for landfill: Fair—too sandy, wetness
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Wendane soil—VIIw, nonirrigated; Tweba soil—IIIw, irrigated, and VIw, nonirrigated
Range site: Wendane soil—024X011N; Tweba soil—024X006N

1143—Wendane silt loam, occasionally flooded

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,500 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Wendane silt loam, 0 to 2 percent slopes, occasionally flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Wendane silt loam, 0 to 2 percent slopes, frequently flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—10 percent
• Inclusion 2: Durorthidic Torriorthents, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-silty, mixed (calcareous), mesic—3 percent
• Inclusion 3: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—2 percent

Characteristics of the Wendane Soil

Position on landscape: Alluvial flats

Parent material: Mixed silty alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, seepweed

Typical Profile

0 to 13 inches—silt loam; platy structure; slightly hard, very friable; very strongly alkaline (pH 9.6); strongly saline (30 to 50 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 27 inches—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (25 to 40 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
27 to 60 inches or more—stratified silt loam to clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); slightly to moderately sodic (SAR 20 to 35); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through May—30 to 48 inches; rest of year—below 48 inches
Flooding: Frequency—occasionally; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower areas of alluvial flats
Contrasting features: Frequently flooded
Distinctive present vegetation: Black greasewood, basin wildrye
Inclusion 2
Position on landscape: Alluvial flat remnants
Contrasting features: Moderately well drained
Distinctive present vegetation: Torrey quailbush, black greasewood
Inclusion 3
Position on landscape: Slightly convex higher parts of alluvial flat remnants
Contrasting features: Moderately well drained
Distinctive present vegetation: Shadscale, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated native pasture and hayland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—flooding, wetness
Local roads and streets: Severe—flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Flooding, frost action, excess salt
Irrigation: Wetness, erodes easily, flooding
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: VIw, irrigated, and VIIw, nonirrigated
Range site: 024X011N

1144—Wendane-Batan-Broyles association

Map Unit Setting

Position on landscape: Alluvial flats and fan skirts
Elevation: 4,600 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Wendane silt loam, 0 to 2 percent slopes, frequently

flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—30 percent
• Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—30 percent
• Broyles silt loam, moderately saline, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—10 percent
• Inclusion 2: Reese silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic—5 percent

Characteristics of the Wendane Soil

Position on landscape: Alluvial flats
Parent material: Mixed silty alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, basin wildrye, rubber rabbitbrush, inland saltgrass

Typical Profile

0 to 13 inches—silt loam; platy structure; slightly hard, very friable; very strongly alkaline (pH 9.6); strongly saline (30 to 50 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 27 inches—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
27 to 60 inches or more—stratified silt loam to clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); slightly to moderately sodic (SAR 20 to 35); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through May—30 to 48 inches; rest of year—below 48 inches
Flooding: Frequency—frequent; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Characteristics of the Batan Soil

Position on landscape: Alluvial flat remnants
Parent material: Kind—silty alluvium influenced by loess; source—volcanic rock high in pyroclastics
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, black greasewood

Typical Profile

0 to 5 inches—silt loam; platy structure; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 25 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 68 inches or more—stratified silt loam to silty clay loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Broyles Soil

Position on landscape: Fan skirts
Parent material: Loess capped mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, inland saltgrass, spiny horsebrush

Typical Profile

0 to 5 inches—silt loam; subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly

sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4

5 to 11 inches—silt loam, very fine sandy loam, fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

11 to 60 inches or more—stratified loam to gravelly loamy sand; 5 to 40 percent pebbles (by weight); massive; slightly hard, very friable; very strongly alkaline (pH 9.2); slightly saline to moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent smooth inset fans
Contrasting features: Silty loam throughout the profile
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 2
Position on landscape: Margins of alluvial flats
Contrasting features: A seasonal water table within a depth of 40 inches
Distinctive present vegetation: Black greasewood, shadscale, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Wendane soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair
Suitability of the Batan soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Broyles soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Wendane Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—flooding, wetness
Local roads and streets: Severe—flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Batan Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Broyles Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Wendane soil—VIIw, nonirrigated; Batan soil—IIIs, irrigated, and VIIs, nonirrigated; Broyles soil—IIs, irrigated, and VIIs, nonirrigated
Range site: Wendane soil—024X007N; Batan soil—024X003N; Broyles soil—024X003N

1145—Wendane-Playas association

Map Unit Setting

Position on landscape: Basin floors
Elevation: 4,500 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 120 days

Composition

Major components:
• Wendane silt loam, 0 to 2 percent slopes, occasionally flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—70 percent
• Playas—15 percent
Contrasting inclusions:
• Inclusion 1: Aquic Durorthidic Torriorthents, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Wendane silt loam, 0 to 2 percent slopes, frequently flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Isolde fine sand, 4 to 30 percent slopes—Typic Torripsamments, mixed, mesic—5 percent

Characteristics of the Wendane Soil

Position on landscape: Alluvial flats
Slope features: Length—short; shape—slightly concave to slightly convex
Dominant present vegetation: Black greasewood, alkali rabbitbrush, seepweed

Typical Profile

0 to 13 inches—silt loam; platy structure; slightly hard, very friable; very strongly alkaline (pH 9.6); strongly saline (30 to 50 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 27 inches—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (25 to 40 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
27 to 60 inches or more—stratified silt loam to clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); slightly to moderately sodic (SAR 20 to 35); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through May—30 to 48 inches; rest of year—below 48 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Characteristics of the Playas

Position on landscape: Dry lake and sink areas on basin floors
Slope features: Length—long; shape—smooth or slightly concave
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave channels of alluvial flats
Contrasting features: Less sodium affected
Distinctive present vegetation: Iodinebush, alkali sacaton, inland saltgrass
Inclusion 2
Position on landscape: Lower part of alluvial flats
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Black greasewood, basin wildrye, alkali rabbitbrush
Inclusion 3
Position on landscape: Convex, partially stabilized sand dunes adjacent to playas
Contrasting features: Sandy throughout the profile, excessively drained
Distinctive present vegetation: Black greasewood, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Wendane soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings of the Wendane Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess salt, excess sodium

Shallow excavations: Moderate—flooding, wetness
Local roads and streets: Severe—flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Wendane soil—VIIw, nonirrigated; Playas—VIIIw
Range site: Wendane soil—024X011N

1146—Wendane-Sonoma-Valmy association

Map Unit Setting

Position on landscape: Flood plains, alluvial flats, and fan skirts
Elevation: 5,200 to 5,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Wendane silt loam, 0 to 2 percent slopes, frequently flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—35 percent
• Sonoma silt loam, drained, 0 to 2 percent slopes, occasionally flooded—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—30 percent
• Valmy very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Paranat silt loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine-silty, mixed (calcareous), mesic—6 percent
• Inclusion 2: Aeric Halaquepts, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—6 percent
• Inclusion 3: Durorthidic Torriorthents, 2 to 8 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent

Characteristics of the Wendane Soil

Position on landscape: Broad alluvial flats adjacent to flood plains
Parent material: Mixed silty alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rubber rabbitbrush, inland saltgrass, basin wildrye

Typical Profile

0 to 13 inches—silt loam; platy structure; slightly hard, very friable; very strongly alkaline (pH 9.6); strongly saline (30 to 50 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 27 inches—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
27 to 60 inches or more—stratified silt loam to clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); strongly saline (16 to 30 mmhos/cm); slightly to moderately sodic (SAR 20 to 35); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through May—30 to 48 inches; rest of year—below 48 inches
Flooding: Frequency—frequent; duration—brief or long; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Characteristics of the Sonoma Soil

Position on landscape: Flood plains
Parent material: Silty mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, basin big sagebrush, basin wildrye

Typical Profile

0 to 10 inches—silt loam; subangular blocky structure; hard, friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL; estimated AASHTO classification—A-6
10 to 60 inches or more—stratified silty clay loam to silt

loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: March through June—42 to 60 inches; rest of year—less than 60 inches
Flooding: Frequency—occasional; duration—brief or long; months—March through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Characteristics of the Valmy Soil

Position on landscape: Fan skirts
Parent material: Loess mantled, loamy mixed alluvium
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, basin big sagebrush, black greasewood

Typical Profile

0 to 6 inches—very fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4
6 to 42 inches—stratified very fine sandy loam to gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 10 to 25 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4, A-2, A-1
42 to 60 inches or more—gravelly sand, very gravelly sand; 0 to 10 percent cobbles and stones and 30 to 70 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SP-SM, SM, GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.7 to 6.8 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—4; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Active flood plains immediately adjacent to stream channels
Contrasting features: Thick, dark colored surface layer, very poorly drained
Distinctive present vegetation: Sedge, rush, creeping wildrye, willow
Inclusion 2
Position on landscape: Outer margins of flood plains
Contrasting features: Somewhat poorly drained
Distinctive present vegetation: Torrey quailbush, black greasewood
Inclusion 3
Position on landscape: Convex fanlettes emerging from steeper stream tributaries
Contrasting features: Slopes of 2 to 8 percent
Distinctive present vegetation: Black greasewood, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Wendane soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair
Suitability of the Sonoma soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Valmy soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Wendane Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium

Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—flooding, wetness
Local roads and streets: Severe—flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Sonoma Soil for Selected Uses

Range seeding: Poor—excess salt
Daily cover for landfill: Fair—too clayey
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Moderate—piping, wetness

Ratings of the Valmy Soil for Selected Uses

Range seeding: Poor—too arid
Daily cover for landfill: Fair—small stones, thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Fair—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, seepage, thin layer

Interpretive Groups

Capability classification: Wendane soil—VIIw, nonirrigated; Sonoma soil—IIIw, irrigated, and VIIw, nonirrigated; Valmy soil—IIs, irrigated, and VIIc, nonirrigated
Range site: Wendane soil—024X007N; Sonoma soil—024X006N; Valmy soil—024X022N

1150—Weso fine sandy loam

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Weso fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Blacka very fine sandy loam, 0 to 2 percent slopes—Entic Durorthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent

Characteristics of the Weso Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium with a loess mantle high in volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.5); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
5 to 11 inches—loam, fine sandy loam, very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, CL-ML, SM, SM-SC; estimated AASHTO classification—A-4
11 to 60 inches or more—fine sandy loam, very fine sandy loam; 5 to 5 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 7.8 to 9.4 inches
Water-supplying capacity: 7 inches
Runoff: Very slow

Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent nonburied fan piedmont remnants
Contrasting features: Strongly cemented duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Upper part of fan skirts
Contrasting features: Layer of weak silica accumulation not continuously cemented
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Lower margins of fan skirts
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

1158—Whirlo very fine sandy loam, 2 to 4 percent slopes, occasionally flooded

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Whirlo very fine sandy loam, 2 to 4 percent slopes, occasionally flooded—Typic Camborthids, loamy-skeletal, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Creemon very fine sandy loam, strongly saline-sodic, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—6 percent
• Inclusion 2: Xerollic Camborthids, 2 to 4 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—4 percent

Characteristics of the Whirlo Soil

Position on landscape: Inset fans
Parent material: Gravelly mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, spiny hopsage

Typical Profile

0 to 7 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—SM; estimated AASHTO classification—A-4
7 to 13 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4

13 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Flooding: Frequency—occasional; duration—very brief; months—March through June
Permeability: Moderately rapid
Available water capacity: 4.7 to 5.9 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave adjacent fan skirts
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Bud sagebrush
Inclusion 2
Position on landscape: Slightly lower areas and adjacent to channels of inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, Wyoming big sagebrush, basin wildrye
Inclusion 3
Position on landscape: Fanlettes from adjacent fan piedmont remnants
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Spiny hopsage, Wyoming big sagebrush, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones, seepage
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: IIIw, irrigated, and VIIw, nonirrigated
Range site: 024X003N

1160—Whirlo gravelly loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Whirlo gravelly loam, 2 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Torriorthents, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 2: Typic Camborthids, 2 to 8 percent slopes—Typic Camborthids, sandy-skeletal, mixed, mesic—3 percent
• Inclusion 3: Typic Nadurargids, 2 to 8 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—3 percent

Characteristics of the Whirlo Soil

Position on landscape: Broad inset fans
Parent material: Kind—alluvium influenced by loess; source—basalt, rhyolite, and tuffs
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—gravelly loam; 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated

Unified classification—ML, GM; estimated AASHTO classification—A-4

12 to 24 inches—very gravelly fine sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 6 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.5 to 5.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex adjacent fan skirts
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Areas adjacent to channels
Contrasting features: Very gravelly sand substratum
Distinctive present vegetation: Shadscale

Inclusion 3
Position on landscape: Fan piedmont remnants
Contrasting features: Indurated duripan at a depth of 10 to 20 inches
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: IIIe, irrigated, and VIIs, nonirrigated
Range site: 024X002N

1162—Whirlo silt loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Inset fans and fan skirts
Elevation: 4,400 to 4,900 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Whirlo silt loam, 0 to 2 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 4 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Creemon silt loam, 2 to 4 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 3: Wholan silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—5 percent

Characteristics of the Whirlo Soil

Position on landscape: Inset fans and fan skirts
Parent material: Loess capped mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 12 inches—silt loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.1); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

12 to 24 inches—very gravelly fine sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

24 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.4); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.9 to 6.1 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper margins of fan skirts
Contrasting features: Fine sandy loam throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Lower margins of fan skirts
Contrasting features: Silt loam throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Outer margins of inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Winterfat

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty
Terraces and diversions: Erodes easily, droughty

Interpretive Groups

Capability classification: IIs, irrigated, and VIIs, nonirrigated
Range site: 024X002N

1163—Whirlo silt loam, 2 to 4 percent slopes

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,600 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Whirlo silt loam, 2 to 4 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 2 to 4

percent slopes—Duric Camborthids, coarse-loamy, mixed mesic—5 percent
• Inclusion 2: Creemon silt loam, 2 to 4 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 3: Wholan silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—5 percent

Characteristics of the Whirlo Soil

Position on landscape: Inset fans
Parent material: Loess capped mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 12 inches—silt loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.1); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
12 to 24 inches—stratified very gravelly fine sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.9 to 6.1 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth lower part of inset fans
Contrasting features: Less than 35 percent rock fragments in the substratum
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Smooth fan skirts at the terminus of inset fans
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Outer margins of inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Winterfat

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, slope
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIe, irrigated, and VIIs, nonirrigated
Range site: 024X002N

1165—Whirlo-Creemon association

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,500 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Whirlo gravelly loam, 2 to 4 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—45 percent
• Creemon silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Torriorthents, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Durixerollic Camborthids, 0 to 2 percent slopes, occasionally flooded—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Durixerollic Camborthids, 0 to 2 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Whirlo Soil

Position on landscape: Inset fan remnants
Parent material: Very gravelly mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—gravelly loam; 25 to 40 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, GM; estimated AASHTO classification—A-4
12 to 24 inches—very gravelly fine sandy loam, very gravelly loam, fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
24 to 60 inches or more—stratified very gravelly loam, extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.5 to 5.0 inches
Water-supplying capacity: 6 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Creemon Soil

Position on landscape: Irregularly channeled and overwashed parts of inset fans
Parent material: Silty mixed alluvium; influenced by volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 10 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 15 inches—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 to 45 inches—stratified very fine sandy loam to silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—ML; estimated AASHTO classification—A-4
45 to 60 inches or more—stratified gravelly very fine sandy loam to fine sandy loam; 15 to 30 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 9.8 to 12.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth to slightly concave lower portions of inset fans
Contrasting features: Strongly saline surface layer
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 2
Position on landscape: Areas adjacent to stream channels on the lower part of inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, bluegrass
Inclusion 3
Position on landscape: Areas adjacent to stream channels on the upper part of inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available, homesites

Wildlife habitat elements:
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Creemon soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—small stones, seepage
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Creemon Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt

Interpretive Groups

Capability classification: Whirlo soil—IIe, irrigated, and VIIs, nonirrigated; Creemon soil—IIc, irrigated, and VIIc, nonirrigated
Range site: Whirlo soil—024X002N; Creemon soil—024X002N

1166—Whirlo-Pumper silt loams

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,350 to 4,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Whirlo silt loam, 0 to 2 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—50 percent
• Pumper silt loam, 0 to 2 percent slopes—Typic Camborthids, sandy-skeletal, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Orovada fine sandy loam, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—10 percent

Characteristics of the Whirlo Soil

Position on landscape: Upper and middle part of fan skirts
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—silt loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.1); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

12 to 24 inches—very gravelly fine sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

24 to 60 inches or more—very gravelly sandy loam, extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.4); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 20 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.9 to 6.1 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Pumper Soil

Position on landscape: Lower fan skirts, adjacent to channels, and outwash areas
Parent material: Loess high in volcanic ash over gravelly and sandy mixed alluvium
Slope features: Length—short; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—silt loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—ML; estimated AASHTO classification—A-4

12 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sand; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); massive; hard, friable; moderately alkaline (pH 8.3); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.1 to 4.8 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Upper parts of inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:

Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Pumper soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Whirlo Soil for Selected Uses

Range seeding: Poor—too arid
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Pumper Soil for Selected Uses

Range seeding: Poor—too arid
Daily cover for landfill: Poor—too sandy, small stones, seepage
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—too sandy, small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Whirlo soil—VIIs, nonirrigated; Pumper soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Whirlo soil—024X002N; Pumper soil—024X002N

1168—Whirlo-Oxcorel association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 4,600 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Whirlo gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—50 percent
• Oxcorel very fine sandy loam, 4 to 15 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 2 to 15 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—10 percent
• Inclusion 2: Durorthidic Torriorthents, 2 to 8 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Whirlo Soil

Position on landscape: Inset fans and fan skirts
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—gravelly very fine sandy loam; 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, GM; estimated AASHTO classification—A-4
12 to 24 inches—very gravelly loam, very gravelly fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-1
24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.0 to 5.4 inches
Water-supplying capacity: 6 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium mantled by loess
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 20 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly

alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

20 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); nonsaline to slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 20 inches—very slow; below this depth—moderately rapid
Available water capacity: 5.0 to 6.9 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan drainageways and upper inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Lower margins of fan skirts
Contrasting features: Moderately well drained
Distinctive present vegetation: Shadscale, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess sodium

Interpretive Groups

Capability classification: Whirlo soil—IIIe, irrigated, and VIIs, nonirrigated; Oxcorel soil—VIIs, nonirrigated
Range site: Whirlo soil—024X002N; Oxcorel soil—024X002N

1169—Whirlo-Broyles association

Map Unit Setting

Position on landscape: Fan skirts and inset fans
Elevation: 4,700 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Whirlo gravelly very fine sandy loam, 4 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—55 percent
• Broyles very fine sandy loam, 2 to 4 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—9 percent
• Inclusion 2: Xeric Torriorthents, 2 to 8 percent

slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—6 percent

Characteristics of the Whirlo Soil

Position on landscape: Upper fan skirts
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—gravelly very fine sandy loam; 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, GM; estimated AASHTO classification—A-4

12 to 24 inches—very gravelly loam, very gravelly fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-1

24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.0 to 5.4 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Broyles Soil

Position on landscape: Lower fan skirts and inset fans
Parent material: Loess over loamy mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 11 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR 5 to 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

11 to 60 inches or more—stratified loam to gravelly loamy sand; 5 to 40 percent pebbles (by weight); massive; hard, friable; very strongly alkaline (pH 9.2); slightly saline to moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 13 to 25); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, upper inset fans and upper margins of fan skirts
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Position on landscape: Adjacent to shallow stream channels
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Broyles soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Broyles Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Whirlo soil—IIIe, irrigated, and VIIs, nonirrigated; Broyles soil—IIe, irrigated, and VIIc, nonirrigated
Range site: Whirlo soil—024X002N; Broyles soil—024X002N

1170—Wholan silt loam

Map Unit Setting

Position on landscape: Fan skirts and inset fans
Elevation: 4,700 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Wholan silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Antel silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent
• Inclusion 2: Creemon silt loam, 2 to 4 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 3: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Wholan Soil

Position on landscape: Fan skirts and inset fans
Parent material: Loess capped, silty mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Winterfat, bud sagebrush, bottlebrush squirreltail, shadscale

Typical Profile

0 to 5 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 60 inches or more—very fine sandy loam, silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 9.7 to 11.5 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth lower margins of fan skirts
Contrasting features: Layer of weak silica accumulation
Distinctive present vegetation: Shadscale, bud sagebrush, Indian ricegrass
Inclusion 2
Position on landscape: Smooth higher areas of fan skirt remnants and inset fans
Contrasting features: Layer of weak silica accumulation
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Convex lower margins of fan skirts
Contrasting features: Layer of weak silica accumulation
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X004N

1174—Wholan silt loam, sandy substratum

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,700 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Wholan silt loam, sandy substratum, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Relley silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-silty, mixed, mesic—10 percent
• Inclusion 2: Hessing silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Wholan Soil

Position on landscape: Fan skirts
Parent material: Loess capped mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Winterfat, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 6 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 45 inches—very fine sandy loam, silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
45 to 60 inches or more—stratified very gravelly loam to very gravelly sand; 0 to 10 percent cobbles and stones and 60 to 70 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 8.2 to 10.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower areas of fan skirts

Contrasting features: Layer of weak silica accumulation
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Upper margins of fan skirts
Contrasting features: Fine sandy loam and gravelly sandy loam throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—poor; shallow water areas—very poor

Ratings and Restrictive Features for Selected Uses and Practices
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Fair—area reclaim, excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—hard to pack, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X004N

1177—Wholan, strongly alkaline-Rasille association

Map Unit Setting

Position on landscape: Fan skirts and inset fans
Elevation: 5,400 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Wholan very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—65 percent
• Rasille silt loam, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-silty, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Kelk silt loam, 0 to 4 percent slopes, occasionally flooded—Durixerollic Camborthids, fine-silty, mixed, mesic—5 percent
• Inclusion 2: Xerollic Camborthids, 0 to 2 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Creemon very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent

Characteristics of the Wholan Soil

Position on landscape: Broad fan skirts
Parent material: Silty mixed alluvium influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Saltbush

Typical Profile

0 to 5 inches—very fine sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 60 inches or more—very fine sandy loam, silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 9.7 to 11.5 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Rasille Soil

Position on landscape: Inset fans
Parent material: Silty mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth and concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—silt loam; platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 15 inches—very fine sandy loam, silt loam; prismatic structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 to 26 inches or more—very fine sandy loam, silt loam; massive; soft, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 9.9 to 11.8 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Inset fans near lower margins of fan skirts
Contrasting features: Receives additional moisture from flooding
Distinctive present vegetation: Basin big sagebrush, black greasewood
Inclusion 2
Position on landscape: Concave higher areas of inset fans
Contrasting features: Loam and sandy loam throughout the profile
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage
Inclusion 3
Position on landscape: Slightly convex higher areas of fan skirts
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Wholan soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Rasille soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Wholan Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Rasille Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action, flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Wholan soil—IIc, irrigated, and VIIc, nonirrigated; Rasille soil—IIc, irrigated, and VIc, nonirrigated
Range site: Wholan soil—024X012N; Rasille soil—024X005N

1178—Wholan-Rasille association

Map Unit Setting

Position on landscape: Fan skirts and inset fans
Elevation: 5,000 to 5,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Wholan silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—60 percent
• Rasille silt loam, gravelly substratum, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-silty, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Typic Camborthids, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 2: Duric Camborthids, 0 to 4 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Durixerollic Camborthids, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Wholan Soil

Position on landscape: Fan skirts
Parent material: Silty mixed alluvium influenced by loess
Slope features: Length—long; shape—smooth
Dominant present vegetation: Bud sagebrush, winterfat

Typical Profile

0 to 5 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 60 inches or more—very fine sandy loam, silt loam; massive; slightly hard, very friable; moderately alkaline (pH 8.2); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 9.7 to 11.5 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Rasille Soil

Position on landscape: Inset fans
Parent material: Silty mixed alluvium influenced by loess
Slope features: Length—short; shape—concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—silt loam; platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 15 inches—very fine sandy loam, silt loam; subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 to 41 inches—very fine sandy loam, silt loam; massive; soft, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
41 to 60 inches or more—stratified fine sandy loam to very gravelly coarse sand; 25 to 50 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 7.6 to 9.3 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex lower margins of fan skirts
Contrasting features: Strongly alkaline surface layer
Distinctive present vegetation: Saltbush, bottlebrush squirreltail
Inclusion 2
Position on landscape: Slightly higher areas on fan skirts
Contrasting features: Loamy and coarse textured throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Inclusion 3
Position on landscape: Convex upper margins of fan skirts
Contrasting features: Loamy and coarse textured throughout the profile
Distinctive present vegetation: Wyoming big sagebrush, small rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland, wildlife habitat, irrigated cropland if irrigation water is made available

Wildlife habitat elements:
Suitability of the Wholan soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Rasille soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Wholan Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Rasille Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—area reclaim
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Wholan soil—IIc, irrigated, and VIIc, nonirrigated; Rasille soil—IIc, irrigated, and VIc, nonirrigated
Range site: Wholan soil—024X004N; Rasille soil—028B010N

1201—Slaven-Linrose-Cleavage association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 7,200 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Slaven very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—45 percent
• Linrose gravelly loam, 50 to 75 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—30 percent
• Cleavage very gravelly loam, 4 to 15 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Loncan loam, 30 to 75 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—7 percent
• Inclusion 2: Rock outcrop—2 percent
• Inclusion 3: Aridic Argixerolls, 50 to 75 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—1 percent

Characteristics of the Slaven Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum influenced by loess; source—chert, shale, and quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, arrowleaf balsamroot

Typical Profile

0 to 4 inches—very gravelly loam; 55 to 65 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2);

estimated Unified classification—GM; estimated AASHTO classification—A-2
4 to 22 inches—extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam; 0 to 15 percent cobbles and stones and 75 to 85 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
22 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.5 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Linrose Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—chert, shale, and quartzite
Slope features: Length—long; shape—concave
Dominant present vegetation: Black sagebrush, Idaho fescue, bluebunch wheatgrass

Typical Profile

0 to 8 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, ML; estimated AASHTO classification—A-4
8 to 26 inches—very gravelly loam, very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.5 to 3.7 inches
Water-supplying capacity: 12 inches
Runoff: Very rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Cleavage Soil

Position on landscape: Spurs and crests of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, low sagebrush, bluebunch wheatgrass

Typical Profile

0 to 4 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2, A-4, A-6
4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 25 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7

Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, south-facing side slopes of mountains
Contrasting features: Lacks layer of clay accumulation
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue
Inclusion 2
Position on landscape: Random small peaks of mountains
Contrasting features: Bedrock exposed at the surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Convex, north-facing side slopes of mountains
Contrasting features: Receives additional moisture from drifted snow
Distinctive present vegetation: Idaho fescue, mountain big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Slaven soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Linrose soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Slaven Soil for Selected Uses
Range seeding: Poor—droughty, small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Linrose Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Cleavage Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Slaven soil—VIIs, nonirrigated; Linrose soil—VIIe, nonirrigated; Cleavage soil—VIIs, nonirrigated
Range site: Slaven soil—024X029N; Linrose soil—024X042N; Cleavage soil—024X027N

1202—Slaven-Wiskan-Graley Variant association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,300 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Slaven very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—35 percent
• Wiskan gravelly loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—30 percent
• Graley Variant very gravelly loam, 15 to 50 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Glean gravelly silt loam, 30 to 50 percent

slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—8 percent
• Inclusion 2: Cleavage very gravelly loam, 15 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Slaven Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum influenced by loess; source—chert, shale, and quartzite

Typical Profile

0 to 4 inches—very gravelly loam; 55 to 65 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2
4 to 22 inches—extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam; 0 to 15 percent cobbles and stones and 75 to 85 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
22 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.5 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Wiskan Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—thin loess mantle over residuum and colluvium; source—chert and other various kinds of rock
Slope features: Length—long; shape—concave to slightly convex
Dominant present vegetation: Black sagebrush, bluebunch wheatgrass

Typical Profile

0 to 16 inches—gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); granular structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, CL-ML, SM-SC, ML; estimated AASHTO classification—A-4
16 to 28 inches—very gravelly clay loam, very gravelly loam, extremely gravelly clay loam; 10 to 25 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.4 to 3.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Graley Variant Soil

Position on landscape: Ridges and shoulder slopes of mountains
Parent material: Kind—residuum; source—chert
Slope features: Length—short; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 7 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than

2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-1

7 to 15 inches—very gravelly clay loam, very gravelly clay; 10 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-7

15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.2 to 2.1 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing pockets on side slopes of mountains
Contrasting features: Additional moisture from drifted snow
Distinctive present vegetation: Idaho fescue, mountain big sagebrush

Inclusion 2
Position on landscape: Windswept crests of mountains
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Black sagebrush, low sagebrush

Inclusion 3
Position on landscape: Random small peaks, ridges, and rimrock of mountains
Contrasting features: Bedrock exposed at the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Slaven soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Wiskan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Graley Variant soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Slaven Soil for Selected Uses
Range seeding: Poor—droughty, small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Wiskan Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Graley Variant Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, too clayey, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Slaven soil—VIIs, nonirrigated; Wiskan soil—VIIe, nonirrigated; Graley Variant soil—VIIs, nonirrigated
Range site: Slaven soil—024X029N; Wiskan soil—024X031N; Graley Variant soil—024X028N

1203—Slaven-Glean-Cleavage association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Slaven very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—35 percent
• Glean gravelly loam, 30 to 50 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—30 percent
• Cleavage very gravelly loam, 15 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Hapgood very gravelly loam, 50 to 75 percent slopes—Pachic Cryoborolls, loamy-skeletal, mixed—8 percent
• Inclusion 2: Cleavage extremely gravelly loam, 8 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—4 percent
• Inclusion 3: Sumine extremely gravelly loam, 30 to 75 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—3 percent

Characteristics of the Slaven Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum and colluvium influenced by loess; source—chert, shale, and quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, Idaho fescue
Surface cover: 45 percent pebbles, 5 percent cobbles

Typical Profile

0 to 4 inches—very gravelly loam; 55 to 65 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2
4 to 22 inches—extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam; 0 to 15 percent cobbles and stones and 75 to 85 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
22 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.5 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Glean Soil

Position on landscape: North- and west-facing side slopes and snow pockets on mountains
Parent material: Kind—gravelly colluvium and residuum; source—various kinds of rock
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Mountain big sagebrush, snowberry, lanceleaf rabbitbrush, Idaho fescue, bluegrass

Typical Profile

0 to 6 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2, A-4
6 to 49 inches—very gravelly loam, very gravelly sandy loam; 0 to 25 percent cobbles and stones and 40 to 75 percent pebbles (by weight); massive; soft, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
49 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.1 to 5.0 inches

Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.15; T value—3; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Cleavage Soil

Position on landscape: Crests and shoulder slopes of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Douglas rabbitbrush, Sandberg bluegrass, bluebunch wheatgrass

Typical Profile

0 to 4 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2, A-4, A-6
4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 25 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, higher snow pockets of mountains
Contrasting features: Higher water-supplying capacity
Distinctive present vegetation: Mountain big sagebrush, snowberry, Sandberg bluegrass
Inclusion 2
Position on landscape: Convex, windswept, narrow crests of mountains
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Low sagebrush, black sagebrush, Sandberg bluegrass, Idaho fescue
Inclusion 3
Position on landscape: Convex, lower, south-facing side slopes of mountains
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Mountain big sagebrush, Douglas rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Slaven soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Glean soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Slaven Soil for Selected Uses
Range seeding: Poor—droughty, small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Glean Soil for Selected Uses
Range seeding: Fair—droughty, small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Cleavage Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Slaven soil—VIIs, nonirrigated; Glean soil—VIIe, nonirrigated; Cleavage soil—VIIs, nonirrigated
Range site: Slaven soil—024X029N; Glean soil—024X023N; Cleavage soil—024X027N

1212—Wiskan-Roca-Bregar association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,300 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Wiskan gravelly silt loam, 15 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—40 percent
• Roca extremely cobbly sandy clay loam, 15 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—30 percent
• Bregar extremely gravelly sandy loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Linrose extremely stony loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Locane gravelly very fine sandy loam, 15 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 3: Aridic Haploxerolls, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent

Characteristics of the Wiskan Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum and colluvium with a thin loess mantle; source—chert and various kinds of rock
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Black sagebrush, bluebunch wheatgrass

Typical Profile

0 to 16 inches—gravelly silt loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); granular structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, SM-SC, ML, CL-ML; estimated AASHTO classification—A-4
16 to 28 inches—very gravelly clay loam, very gravelly loam, extremely gravelly clay loam; 10 to 25 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.6 to 3.2 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Roca Soil

Position on landscape: South- and west-facing side slopes of mountains

Parent material: Kind—residuum; source—shale and chert
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 5 inches—extremely cobbly sandy clay loam; 50 to 65 percent cobbles and stones or 60 to 75 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
5 to 27 inches—very gravelly clay loam, very gravelly clay; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
27 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.8 to 3.5 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Bregar Soil

Position on landscape: Crests and shoulder slopes of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex to smooth
Dominant present vegetation: Black sagebrush, bluebunch wheatgrass, low sagebrush

Typical Profile

0 to 4 inches—extremely gravelly sandy loam; 10 to 20 percent cobbles and stones and 70 to 80 percent pebbles (by weight); platy structure; soft, very friable; slightly acid (pH 6.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GP-GM, GP-GC, GM; estimated AASHTO classification—A-1, A-2
4 to 11 inches—very gravelly clay loam, extremely gravelly loam, very cobbly sandy clay loam; 0 to 40 percent cobbles and stones and 65 to 80 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 12 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.0 to 1.3 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing, colluvial back slopes of mountains
Contrasting features: Higher water-supplying capacity
Distinctive present vegetation: Black sagebrush, Idaho fescue
Inclusion 2
Position on landscape: Low elevation, south- and west-facing side slopes of mountains
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass
Inclusion 3
Position on landscape: North-facing snow pockets on concave back slopes of mountains
Contrasting features: Receives additional soil moisture from drifted snow
Distinctive present vegetation: Idaho fescue, mountain big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Wiskan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bregar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Wiskan Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Roca Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Bregar Soil for Selected Uses
Range seeding: Poor—droughty, small stones, rooting depth
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Wiskan soil—VIIe, nonirrigated; Roca soil—VIIs, nonirrigated; Bregar soil—VIIs, nonirrigated
Range site: Wiskan soil—024X031N; Roca soil—024X028N; Bregar soil—024X016N

1215—Wiskan-Locane association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,300 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Wiskan gravelly silt loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—60 percent
• Locane very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Cleavage extremely cobbly loam, 15 to 50 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Glean gravelly silt loam, 30 to 50 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Xerollic Haplargids, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—5 percent

Characteristics of the Wiskan Soil

Position on landscape: Convex side slopes of mountains
Parent material: Kind—residuum with a thin loess mantle; source—chert, shale, and various other rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, bluebunch wheatgrass

Typical Profile

0 to 16 inches—gravelly silt loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); granular structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML, SM-SC, CL-ML; estimated AASHTO classification—A-4
16 to 28 inches—very gravelly clay loam, very gravelly loam, extremely gravelly clay loam; 10 to 25 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0);

nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.6 to 3.2 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Locane Soil

Position on landscape: Concave side slopes of mountains
Parent material: Kind—residuum; source—shale and conglomerate
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 6 inches—very gravelly loam; 5 to 15 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
6 to 14 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—Moderate; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, windswept crests of mountains
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Low sagebrush, black sagebrush, bluegrass
Inclusion 2
Position on landscape: Concave, north-facing snow pockets on side slopes of mountains
Contrasting features: Receives additional moisture from drifted snow
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue
Inclusion 3
Position on landscape: Lower side slopes of mountains
Contrasting features: Clayey subsoil
Distinctive present vegetation: Black sagebrush, bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Wiskan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Locane soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Wiskan Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Locane Soil for Selected Uses

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Wiskan soil—VIIe, nonirrigated; Locane soil—VIIs, nonirrigated
Range site: Wiskan soil—024X031N; Locane soil—024X035N

1216—Wiskan-Linrose association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,400 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 42 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Wiskan very gravelly silt loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—60 percent
• Linrose gravelly silt loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Slaven very gravelly silt loam, 50 to 75 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—7 percent
• Inclusion 2: Rubble land—6 percent
• Inclusion 3: Bregar extremely gravelly loam, 8 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Wiskan Soil

Position on landscape: Crests and shoulder slopes of mountains
Parent material: Kind—a thin loess mantle over residuum and colluvium; source—chert
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, bluebunch wheatgrass

Typical Profile

0 to 16 inches—very gravelly silt loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); granular structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2, A-4
16 to 28 inches—very gravelly clay loam, very gravelly loam, extremely gravelly clay loam; 10 to 25 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.4 to 3.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Linrose Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum and colluvium; source—chert, shale, and quartzite
Slope features: Length—long; shape—concave
Dominant present vegetation: Black sagebrush, Idaho fescue

Typical Profile

0 to 8 inches—gravelly silt loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, ML; estimated AASHTO classification—A-4

8 to 26 inches—very gravelly loam, very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.6 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, south-facing side slopes of mountains
Contrasting features: Very gravelly clay subsoil
Distinctive present vegetation: Mountain big sagebrush, bluebunch wheatgrass
Inclusion 2
Position on landscape: Rock screes on side slopes of mountains
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Crests of lower elevation parts of mountains
Contrasting features: Bedrock within a depth of 20 inches
Distinctive present vegetation: Black sagebrush, low sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Wiskan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Linrose soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Wiskan Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Linrose Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Wiskan soil—VIIs, nonirrigated; Linrose soil—VIIe, nonirrigated
Range site: Wiskan soil—024X031N; Linrose soil—024X042N

1220—Boulflat-Havingdon-Dewar association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 5,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Boulflat gravelly loam, 4 to 30 percent slopes—Haploxerollic Durargids, fine-loamy, mixed, mesic—40 percent
• Havingdon gravelly silt loam, 15 to 30 percent

slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—30 percent
• Dewar cobbly loam, 4 to 30 percent slopes—Xerollic Durargids, loamy, mixed, mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Humdun silt loam, 4 to 30 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, frigid—5 percent
• Inclusion 2: Rock outcrop—5 percent

Characteristics of the Boulflat Soil

Position on landscape: North- and east-facing side slopes of foothills
Parent material: Kind—residuum and colluvium influenced by loess; source—chert, shale, and quartzite
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass, bluebunch wheatgrass

Typical Profile

0 to 6 inches—gravelly loam; 25 to 50 percent pebbles (by weight); granular structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-4
6 to 23 inches—gravelly clay loam, gravelly loam, gravelly sandy clay loam; 25 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
23 to 32 inches—strongly cemented duripan; massive
32 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 20 to 34 inches
Depth to bedrock: 22 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.4 to 4.1 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Havingdon Soil

Position on landscape: South- and west-facing side slopes of foothills
Parent material: Kind—residuum influenced by loess and volcanic ash; source—chert and shale
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Sandberg bluegrass

Typical Profile

0 to 3 inches—gravelly silt loam; 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-4
3 to 22 inches—very gravelly clay, very gravelly sandy clay, extremely gravelly clay loam; 65 to 85 percent pebbles (by weight); massive; very hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
22 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 26 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.8 to 2.3 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Dewar Soil

Position on landscape: Interhill fan remnants
Parent material: Loess and silty mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, littleleaf horsebrush

Typical Profile

0 to 4 inches—cobbly loam; 15 to 40 percent cobbles and stones and 10 to 20 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/

cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4

4 to 14 inches—cobbly silty clay loam; 25 to 30 percent cobbles and stones and 10 to 20 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

14 to 19 inches—very cobbly silt loam; 30 to 40 percent cobbles and stones and 45 to 55 percent pebbles (by weight); subangular blocky structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-6

19 to 32 inches or more—indurated duripan; massive; extremely hard, extremely firm

32 to 60 inches or more—gravelly sandy loam; 40 to 50 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 13 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.4 to 2.8 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1

Position on landscape: North-facing colluvial foot slopes of foothills
Contrasting features: Lacks layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, littleleaf horsebrush

Inclusion 2

Position on landscape: Random small peaks of foothills, ridges, and rimrock
Contrasting features: Bedrock exposed at the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Boulflat soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Havingdon soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Dewar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Boulflat Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Havingdon Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Dewar Soil for Selected Uses
Range seeding: Fair—large stones, droughty, erodes easily
Daily cover for landfill: Poor—cemented pan, slope
Shallow excavations: Severe—cemented pan, slope
Local roads and streets: Severe—cemented pan, slope
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, cemented pan, slope
Pond reservoir areas: Severe—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Boulflat soil—VIe, nonirrigated;

Havingdon soil—VIIe, nonirrigated; Dewar soil—VIIs, nonirrigated
Range site: Boulflat soil—024X005N; Havingdon soil—024X035N; Dewar soil—024X005N

1221—Boulflat-Colbar-Old Camp association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,300 to 5,900 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Boulflat gravelly loam, 4 to 15 percent slopes—Haploxerollic Durargids, fine-loamy, mixed, mesic—50 percent
• Colbar gravelly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—20 percent
• Old Camp very cobbly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Typic Camborthids, 8 to 15 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Typic Haplargids, 8 to 15 percent slopes—Typic Haplargids, fine, montmorillonitic, mesic—3 percent

Characteristics of the Boulflat Soil

Position on landscape: Crests and broad side slopes of foothills
Parent material: Kind—residuum and colluvium influenced by loess; source—chert
Slope features: Length—short; shape—smooth to convex
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, Indian ricegrass, Thurber needlegrass

Typical Profile

0 to 6 inches—gravelly loam; 25 to 50 percent pebbles (by weight); granular structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-4
6 to 23 inches—gravelly clay loam, gravelly loam, gravelly sandy clay loam; 25 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
23 to 32 inches—strongly cemented duripan; massive
32 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 20 to 34 inches
Depth to bedrock: 22 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.4 to 4.1 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Colbar Soil

Position on landscape: North- and east-facing side slopes of foothills
Parent material: Kind—residuum and colluvium; source—andesite, dacite, and tuff
Slope features: Length—long; shape—smooth to concave
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, Indian ricegrass, Thurber needlegrass

Typical Profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, GM-GC, SM, GM; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30

percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Old Camp Soil

Position on landscape: Several dissected side slope areas of foothills
Parent material: Kind—residuum influenced by volcanic ash; source—basalt and andesite
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, small rabbitbrush

Typical Profile

0 to 2 inches—very cobbly loam; 25 to 55 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM, GM-GC, SM-SC; estimated AASHTO classification—A-4, A-2
2 to 14 inches—very stony loam, very cobbly loam, very cobbly clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave drainageways of foothills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage
Inclusion 2
Position on landscape: Convex, lower side slopes of foothills and summits of adjacent dissected rock pediment remnants
Contrasting features: Bedrock at a depth of more than 40 inches
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Convex dissected ridges and side slopes of foothills
Contrasting features: Deep soils with a clayey subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Boulflat soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Boulflat Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—depth to bedrock
Shallow excavations: Severe—depth to bedrock

Local roads and streets: Moderate—slope, depth to bedrock, frost action
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Colbar Soil for Selected Uses
Range seeding: Fair—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, small stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope, large stones
Local roads and streets: Severe—depth to bedrock, slope, large stones
Roadfill: Poor—depth to bedrock, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones, depth to bedrock

Interpretive Groups

Capability classification: Boulflat soil—IVe, irrigated, and VIs, nonirrigated; Colbar soil—VIe, nonirrigated; Old Camp soil—VIIs, nonirrigated
Range site: Boulflat soil—024X005N; Colbar soil—024X005N; Old Camp soil—024X005N

1240—Redflame-Kingingham association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,000 to 5,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Redflame very gravelly loam, 4 to 15 percent slopes—Duric Haplargids, loamy-skeletal, mixed, mesic—55 percent
• Kingingham gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Nadurargids, fine montmorillonitic, mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Duric Natrargids, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—7 percent
• Inclusion 2: Xerollic Haplargids, 2 to 8 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Typic Camborthids, 15 to 30 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—4 percent

Characteristics of the Redflame Soil

Position on landscape: Fan aprons
Parent material: Gravelly mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, littleleaf horsebrush
Surface cover: 60 percent pebbles, 5 percent cobbles

Typical Profile

0 to 5 inches—very gravelly loam; 0 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM-GC, GM; estimated AASHTO classification—A-2
5 to 14 inches—very gravelly clay loam, very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2
14 to 60 inches or more—very gravelly sandy loam; 5 to 10 percent cobbles and stones and 55 to 70 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: In the upper 14 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 2.7 to 4.1 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Kingingham Soil

Position on landscape: Summits of nonburied fan piedmont remnants
Parent material: Thin loess mantle over mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
7 to 22 inches—gravelly clay loam, gravelly clay, gravelly silty clay loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL, CH, GC; estimated AASHTO classification—A-7
22 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 3.5 to 4.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow to medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower fan piedmont remnants
Contrasting features: Silty clay loam subsoil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Side slopes of fan piedmont remnants adjacent to deep channels
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage
Inclusion 3
Position on landscape: Inset fans
Contrasting features: Slopes of 15 to 30 percent
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Redflame soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Kingingham soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Redflame Soil for Selected Uses
Range seeding: Poor—too arid, small stones
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—slope
Local roads and streets: Moderate—slope
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Seepage, slope
Embankments, dikes, and levees: Slight

Ratings of the Kingingham Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—cemented pan, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Topsoil: Poor—small stones, excess sodium, too clayey
Pond reservoir areas: Moderate—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer, excess sodium

Interpretive Groups

Capability classification: Redflame soil—VIIs, nonirrigated; Kingingham soil—VIIs, nonirrigated
Range site: Redflame soil—024X002N; Kingingham soil—024X002N

1263—Graley-Loncan-Bregar association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,700 to 7,400 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Graley very gravelly sandy loam, 30 to 50 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—40 percent
• Loncan gravelly loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—25 percent
• Bregar extremely gravelly loam, 15 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Glean gravelly silt loam, 30 to 75 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—7 percent
• Inclusion 2: Wiskan very gravelly silt loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—6 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Graley Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—quartzite
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass
Surface cover: 30 percent pebbles, 5 percent cobbles

Typical Profile

0 to 7 inches—very gravelly sandy loam; 0 to 5 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1
7 to 14 inches—very gravelly clay, very gravelly clay loam; 0 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.3 to 1.8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—Low
Potential frost action: Moderate

Characteristics of the Loncan Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—volcanic rocks and sedimentary rocks
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Mountain big sagebrush, Idaho fescue, snowberry

Typical Profile

0 to 14 inches—gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6
14 to 31 inches—very gravelly loam, extremely cobbly loam, very gravelly sandy clay loam; 10 to 45 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified

classification—GC; estimated AASHTO classification—A-2
31 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 21 to 38 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.3 to 3.8 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Bregar Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, low sagebrush, bluebunch wheatgrass

Typical Profile

0 to 4 inches—extremely gravelly loam; 10 to 20 percent cobbles and stones and 70 to 80 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2
4 to 11 inches—very gravelly clay loam, very cobbly sandy clay loam, extremely gravelly sandy clay loam; 5 to 45 percent cobbles and stones and 65 to 75 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 12 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.9 to 1.2 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing back slopes of mountains
Contrasting features: Higher water-supplying capacity
Distinctive present vegetation: Idaho fescue, mountain big sagebrush
Inclusion 2
Position on landscape: Convex protected crests of mountains
Contrasting features: Bedrock at a depth of 20 to 40 inches
Distinctive present vegetation: Black sagebrush, bluebunch wheatgrass
Inclusion 3
Position on landscape: Random small peaks, ridges, and rimrock of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Graley soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Loncan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bregar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Graley Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, too clayey
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, depth to bedrock, slope

Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Loncan Soil for Selected Uses
Range seeding: Fair—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer, large stones

Ratings of the Bregar Soil for Selected Uses
Range seeding: Poor—droughty, small stones, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Graley soil—VIIe, nonirrigated; Loncan soil—VIIe, nonirrigated; Bregar soil—VIIs, nonirrigated
Range site: Graley soil—024X029N; Loncan soil—024X021N; Bregar soil—024X016N

1280—Ricert-Oxcorel-Whirlo association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 5,000 to 5,300 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Ricert gravelly fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—55 percent
• Oxcorel gravelly fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—20 percent
• Whirlo gravelly loam, 2 to 4 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 0 to 2 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—7 percent
• Inclusion 2: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, fine-loamy, mixed, mesic—3 percent

Characteristics of the Ricert Soil

Position on landscape: Summits and side slopes of lower fan piedmont remnants
Parent material: Mixed alluvium with a thin loess mantle
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—gravelly fine sandy loam; 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, SM; estimated AASHTO classification—A-4, A-2
6 to 18 inches—loam, clay loam; 0 to 15 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.5); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
18 to 60 inches or more—very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand; 0 to 15 percent cobbles and stones and 50 to 80 percent pebbles (by weight); massive; very hard, very firm; strongly alkaline (pH 8.8); nonsaline to slightly saline (2 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 18 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 4.4 to 6.5 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B

Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Oxcorel Soil

Position on landscape: Slightly dissected summits of higher fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—gravelly fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4, A-2
5 to 36 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
36 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 36 inches—very slow; below this depth—moderately rapid
Available water capacity: 4.8 to 6.7 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Inset fans and fan skirts
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; smooth to slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, rabbitbrush

Typical Profile

0 to 12 inches—gravelly loam; 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, GM; estimated AASHTO classification—A-4
12 to 24 inches—very gravelly loam, very gravelly fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-1
24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.7 to 5.1 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Upper parts of inset fans and adjacent to channels
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, small rabbitbrush

Inclusion 2
Position on landscape: Smooth to slightly convex fan aprons
Contrasting features: Lacks sodium-affected layer, receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Ricert soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Ricert Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess sodium, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—small stones, seepage
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Ricert soil—IVe, irrigated, and VIIs, nonirrigated; Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated; Whirlo soil—IIe, irrigated, and VIIc, nonirrigated
Range site: Ricert soil—024X002N; Oxcorel soil—024X002N; Whirlo soil—024X002N

1281—Ricert-Whirlo-Pineval association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 4,900 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Ricert gravelly silt loam, 4 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—45 percent
• Whirlo fine sandy loam, 4 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—25 percent
• Pineval gravelly fine sandy loam, 4 to 8 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Duric Natrargids, 4 to 15 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—9 percent
• Inclusion 2: Xeric Torriorthents, 15 to 30 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—4 percent
• Inclusion 3: Typic Nadurargids, 4 to 15 percent slopes—Typic Nadurargids, fine-loamy, mixed, mesic—2 percent

Characteristics of the Ricert Soil

Position on landscape: Lower summits of fan piedmont remnants
Parent material: Mixed alluvium with a thin loess mantle
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, cheatgrass
Surface cover: 30 percent pebbles, 5 percent cobbles

Typical Profile

0 to 6 inches—gravelly silt loam; 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4

6 to 18 inches—loam, clay loam; 0 to 15 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.5); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

18 to 60 inches or more—very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand; 0 to 15 percent cobbles and stones and 50 to 80 percent pebbles (by weight); massive; very hard, very firm; strongly alkaline (pH 8.8); nonsaline to slightly saline (2 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 18 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 4.4 to 6.5 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Inset fan remnants and fan skirts
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—fine sandy loam; 15 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.1); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

12 to 24 inches—very gravelly fine sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 15 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.8 to 6.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Pineval Soil

Position on landscape: Upper summits of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Typical Profile

0 to 5 inches—gravelly fine sandy loam; 25 to 40 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2

5 to 11 inches—very gravelly loam, very gravelly clay loam; 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

11 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly sand; 0 to 25 percent cobbles and stones and 50 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.0 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex upper margins of fan piedmont remnants
Contrasting features: Clayey, sodium-affected subsoil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Convex side slopes of fan piedmont remnants
Contrasting features: Slopes of 15 to 30 percent
Distinctive present vegetation: Wyoming big sagebrush, shadscale
Inclusion 3
Position on landscape: Shoulder slopes of upper fan piedmont remnants
Contrasting features: Duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Ricert soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Pineval soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Ricert Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Pineval Soil for Selected Uses
Range seeding: Fair—too arid, droughty, small stones
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—area reclaim, small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Ricert soil—IVe, irrigated, and VIIs, nonirrigated; Whirlo soil—IIIe, irrigated, and VIIc, nonirrigated; Pineval soil—IVe, irrigated, and VIs, nonirrigated
Range site: Ricert soil—024X002N; Whirlo soil—024X002N; Pineval soil—028B010N

1283—Ricert-Kingingham-Oxcorel association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,700 to 5,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Ricert very fine sandy loam, 2 to 4 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—45 percent
• Kingingham sandy loam, 2 to 4 percent slopes—Typic Nadurargids, fine, montmorillonitic, mesic—20 percent
• Oxcorel silt loam, 2 to 4 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—6 percent
• Inclusion 2: Duric Natrargids, 0 to 2 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—6 percent
• Inclusion 3: Xeric Torriorthents, 0 to 2 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent

Characteristics of the Ricert Soil

Position on landscape: Shoulders and upper side slopes of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—short; shape—smooth to slightly concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very fine sandy loam; 0 to 10 percent cobbles and stones and 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
6 to 18 inches—loam, clay loam; 0 to 15 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
18 to 60 inches or more—very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand; 0 to 15 percent cobbles and stones and 50 to 80 percent pebbles (by weight); massive; very hard, very firm; strongly alkaline (pH 8.8); nonsaline to slightly saline (2 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 18 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 4.5 to 6.6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Kingingham Soil

Position on landscape: Upper summits of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—sandy loam; 0 to 5 percent cobbles and stones and 5 to 25 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM; estimated AASHTO classification—A-2
7 to 22 inches—gravelly clay loam, gravelly clay, gravelly silty clay loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 15 to 30); estimated Unified classification—CL, CH, GC; estimated AASHTO classification—A-7
22 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None

Permeability: Slow
Available water capacity: 3.6 to 4.1 inches
Water-supplying capacity: 7 inches
Runoff: Slow to medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Oxcorel Soil

Position on landscape: Lower summits of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—silt loam; 0 to 5 percent cobbles and stones and 0 to 10 percent pebbles (by weight); platy structure; soft, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 36 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
36 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 36 inches—very slow; below this depth—moderately rapid
Available water capacity: 5.1 to 7.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth inset fans and adjacent fan skirts
Contrasting features: Loamy, coarse textured throughout the profile
Distinctive present vegetation: Shadscale
Inclusion 2
Position on landscape: Foot slopes of fan piedmont remnants
Contrasting features: A strongly saline-sodic surface
Distinctive present vegetation: Shadscale, bud sagebrush, black greasewood
Inclusion 3
Position on landscape: Areas adjacent to active stream channels
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Ricert soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Kingingham soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Ricert Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Kingingham Soil for Selected Uses

Range seeding: Poor—too arid, rooting depth, excess salt
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—cemented pan, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, too clayey
Pond reservoir areas: Moderate—cemented pan, slope
Embankments, dikes, and levees: Severe—excess sodium, thin layer

Ratings of the Oxcorel Soil for Selected Uses

Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, too clayey, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Interpretive Groups

Capability classification: Ricert soil—IVe, irrigated, and VIIs, nonirrigated; Kingingham soil—VIIs, nonirrigated; Oxcorel soil—VIIs, nonirrigated
Range site: Ricert soil—024X002N; Kingingham soil—024X002N; Oxcorel soil—024X002N

1291—Kingingham-Tenabo-Sodhouse association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,300 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Kingingham gravelly very fine sandy loam, 2 to 4 percent slopes—Typic Nadurargids, fine, montmorillonitic, mesic—40 percent
• Tenabo very fine sandy loam, 2 to 4 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—30 percent
• Sodhouse gravelly very fine sandy loam, 4 to 8 percent slopes—Typic Durorthids, loamy, mixed, mesic, shallow—15 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Torriorthents, 15 to 30 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—7 percent
• Inclusion 2: Durixerollic Haplargids, 2 to 4 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 3: Xerollic Camborthids, 2 to 4 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—2 percent

Characteristics of the Kingingham Soil

Position on landscape: Lower summits of fan piedmont remnants
Parent material: Mixed alluvium with a thin loess mantle
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
7 to 22 inches—gravelly clay loam, gravelly clay, gravelly silty clay loam; 0 to 5 percent cobbles and stones and 30 to 40 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 15 to 35); estimated Unified classification—CL, CH, GC; estimated AASHTO classification—A-7
22 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 3.5 to 4.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—4

Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Tenabo Soil

Position on landscape: Upper summits of fan piedmont remnants
Parent material: Mixed alluvium with a thin loess mantle high in volcanic ash
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 18 inches—clay loam, gravelly clay loam, silty clay loam; 5 to 30 percent pebbles (by weight); prismatic structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (2 to 4 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
18 to 40 inches—indurated duripan; massive; extremely hard, extremely firm
40 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly coarse sand; 5 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); single grained; loose; very strongly alkaline (pH 9.2); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 9 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.8 to 4.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Sodhouse Soil

Position on landscape: Upper shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 3 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 5 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-4, A-2
3 to 17 inches—fine sandy loam, loam, very fine sandy loam; 10 to 25 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
17 to 29 inches—indurated duripan; massive
29 to 60 inches or more—extremely gravelly sandy loam, very gravelly loamy sand; 5 to 20 percent cobbles and stones and 50 to 85 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.1 to 2.6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Eroded escarpments of fan piedmont remnants adjacent to inset fans

Contrasting features: Very deep soils, lacks duripan
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Concave side slopes of fan piedmont remnants
Contrasting features: Very deep soils with a very gravelly subsoil
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Position on landscape: Inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Kingingham soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Tenabo soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Sodhouse soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Kingingham Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—cemented pan, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, too clayey, small stones
Pond reservoir areas: Moderate—cemented pan, slope
Embankments, dikes, and levees: Severe—excess sodium, thin layer

Ratings of the Tenabo Soil for Selected Uses
Range seeding: Poor—too arid, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—too sandy, cemented pan, small stones
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—excess sodium, seepage, excess salt

Ratings of the Sodhouse Soil for Selected Uses
Range seeding: Poor—too arid, droughty, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Kingingham soil—VIIs, nonirrigated; Tenabo soil—IVe, irrigated, and VIIs, nonirrigated; Sodhouse soil—VIIs, nonirrigated
Range site: Kingingham soil—024X002N; Tenabo soil—024X002N; Sodhouse soil—024X002N

1292—Kingingham-Golconda-Whirlo association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,900 to 5,600 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Kingingham gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Nadurargids, fine, montmorillonitic, mesic—45 percent
• Golconda gravelly very fine sandy loam, 2 to 8 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—20 percent
• Whirlo gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Typic Nadurargids, 8 to 15 percent slopes—Typic Nadurargids, clayey-skeletal, montmorillonitic, mesic—7 percent

• Inclusion 2: Durixerollic Camborthids, 2 to 4 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 3: Broyles very fine sandy loam, 2 to 4 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—2 percent

Characteristics of the Kingingham Soil

Position on landscape: Upper summits, shoulders, and side slopes of fan piedmont remnants
Parent material: A thin loess mantle over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Surface cover: 20 percent pebbles

Typical Profile

0 to 7 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
7 to 22 inches—gravelly clay loam, gravelly clay, gravelly silty clay loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 20 to 40); estimated Unified classification—CL, CH, GC; estimated AASHTO classification—A-7
22 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 3.5 to 4.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow to medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Golconda Soil

Position on landscape: Lower summits and side slopes of fan piedmont remnants
Parent material: Loess influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 10 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
10 to 23 inches—clay loam, gravelly clay loam, silty clay loam; 10 to 45 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 9.0); strongly saline (16 to 30 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, GC; estimated AASHTO classification—A-6, A-7
23 to 36 inches—strongly cemented duripan; massive; very hard, very firm
36 to 60 inches or more—stratified very gravelly loamy coarse sand to very gravelly sandy loam; 50 to 75 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.2 to 5.1 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Inset fans and fan aprons
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—gravelly very fine sandy loam; 25 to 45 percent pebbles (by weight); platy; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4

12 to 24 inches—very gravelly loam, very gravelly fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-1

24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.8 to 5.2 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, slightly dissected side slopes of fan piedmont remnants
Contrasting features: Sodium-affected layer of clay accumulation
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Concave upper inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Position on landscape: Slightly convex adjacent fan skirts
Contrasting features: Fine sandy loam throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Kingingham soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Golconda soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Kingingham Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess salt
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—cemented pan, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, too clayey
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer, excess sodium

Ratings of the Golconda Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—excess sodium, seepage, excess salt

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid, excess salt

Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Kingingham soil—VIIs, nonirrigated; Golconda soil—IVe, irrigated, and VIIs, nonirrigated; Whirlo soil—IIIe, irrigated, and VIIc, nonirrigated
Range site: Kingingham soil—024X002N; Golconda soil—024X002N; Whirlo soil—024X002N

1293—Kingingham-Oxcorel association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Kingingham gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Nadurargids, fine, montmorillonitic, mesic—55 percent
• Oxcorel gravelly fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Haplargids, 2 to 8 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—6 percent
• Inclusion 2: Xeric Torriorthents, 2 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 3: Durorthidic Torriorthents, 2 to 8 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—4 percent

Characteristics of the Kingingham Soil

Position on landscape: Upper summits of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
7 to 22 inches—gravelly clay loam, gravelly clay, gravelly silty clay loam; 0 to 5 percent cobbles and stones and 30 to 40 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 15 to 30); estimated Unified classification—CL, CH, GC; estimated AASHTO classification—A-7
22 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 3.5 to 4.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Oxcorel Soil

Position on landscape: Lower summits of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—gravelly fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, SC, GM-GC; estimated AASHTO classification—A-4, A-2
5 to 20 inches—clay, clay loam; 0 to 5 percent cobbles

and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

20 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 20 inches—very slow; below this depth—moderately rapid
Available water capacity: 4.8 to 6.7 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave fan aprons
Contrasting features: Lacks a duripan
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Concave inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Inset fan remnants
Contrasting features: Loamy and very gravelly throughout the profile
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Kingingham soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Kingingham Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess salt
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—cemented pan, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, too clayey
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer, excess sodium

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Interpretive Groups

Capability classification: Kingingham soil—VIIs, nonirrigated; Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Kingingham soil—024X002N; Oxcorel soil—024X002N

1294—Kingingham-Whirlo-Beoska association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 4,500 to 5,700 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Kingingham gravelly very fine sandy loam, 2 to 4 percent slopes—Typic Nadurargids, fine, montmorillonitic, mesic—40 percent
• Whirlo fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—25 percent
• Beoska gravelly very fine sandy loam, 2 to 4 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids, 2 to 4 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—9 percent
• Inclusion 2: Creemon very gravelly fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—3 percent
• Inclusion 3: Durixerollic Haplargids, 2 to 4 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—3 percent

Characteristics of the Kingingham Soil

Position on landscape: Upper summits of fan piedmont remnants
Parent material: Thin loess mantle over mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 7 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
7 to 22 inches—gravelly clay loam, gravelly clay, gravelly silty clay loam; 0 to 5 percent cobbles and stones and 30 to 40 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly to moderately sodic (SAR 20 to 46); estimated Unified classification—CL, CH, GC; estimated AASHTO classification—A-7
22 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 3.5 to 4.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Fan skirts and lower inset fans
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 12 inches—fine sandy loam; 15 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.1); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
12 to 24 inches—very gravelly fine sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.9 to 6.1 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Beoska Soil

Position on landscape: Lower summits of fan piedmont remnants
Parent material: Loess mantled mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 13 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-4

13 to 24 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

55 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.0 to 8.1 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper inset fans and fan aprons
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Position on landscape: Lower margins of fan skirts
Contrasting features: Silty throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Fan drainageways
Contrasting features: Receives additional moisture from runoff and flash flooding
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Kingingham soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Kingingham Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess salt
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—cemented pan, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, too clayey
Pond reservoir areas: Moderate—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer, excess sodium

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source

Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Beoska Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Kingingham soil—VIIs, nonirrigated; Whirlo soil—IIc, irrigated, and VIIc, nonirrigated; Beoska soil—IIIe, irrigated, and VIIs, nonirrigated
Range site: Kingingham soil—024X002N; Whirlo soil—024X002N; Beoska soil—024X002N

1342—Doowak, cobbly-Doowak-Veta association

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,900 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Doowak cobbly sandy loam, 0 to 2 percent slopes, occasionally flooded—Xeric Torriorthents, sandy-skeletal, mixed, mesic—30 percent
• Doowak very gravelly loamy sand, 0 to 2 percent slopes—Xeric Torriorthents, sandy-skeletal, mixed, mesic—30 percent
• Veta gravelly sandy loam, 0 to 2 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 8 to 30 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 2: Xerollic Camborthids, 0 to 2 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Doowak, Cobbly, Soil

Position on landscape: Inset fans adjacent to channels
Parent material: Mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage

Typical Profile

0 to 6 inches—cobbly sandy loam; 15 to 25 percent cobbles and stones and 15 to 30 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, SM-SC; estimated AASHTO classification—A-2
6 to 60 inches or more—stratified extremely gravelly sand to extremely gravelly loamy sand; 0 to 5 percent cobbles and stones and 75 to 90 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GP; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Flooding: Frequency—occasional; duration—very brief; months—February through June
Permeability: Very rapid
Available water capacity: 2.2 to 3.3 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Doowak Soil

Position on landscape: Lower inset fan remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very gravelly loamy sand; 5 to 10 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2);

estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

6 to 60 inches or more—stratified extremely gravelly sand to extremely gravelly loamy sand; 5 to 10 percent cobbles and stones and 75 to 90 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GP; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Very rapid
Available water capacity: 1.9 to 3.0 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.05; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Veta Soil

Position on landscape: Upper inset fan remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass

Typical Profile

0 to 4 inches—gravelly sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2

4 to 20 inches—very gravelly sandy loam, extremely gravelly loam; 10 to 30 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

20 to 60 inches or more—stratified extremely gravelly loamy sand to very gravelly loam; 10 to 25 percent cobbles and stones and 50 to 80 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately rapid
Available water capacity: 2.5 to 5.0 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Side slopes of inset fan remnants
Contrasting features: Slopes of 8 to 30 percent
Distinctive present vegetation: Wyoming big sagebrush, bluebunch wheatgrass

Inclusion 2
Position on landscape: Fanlettes from adjacent fan piedmonts
Contrasting features: Subject to flash flooding
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Doowak, cobbly, soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Doowak soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Veta soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Doowak, Cobbly, Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—flooding
Roadfill: Good
Sand: Probable source

Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Doowak Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Veta Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, frost action
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Doowak, cobbly, soil—VIIw, nonirrigated; Doowak soil—VIIs, nonirrigated; Veta soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Doowak, cobbly, soil—024X041N; Doowak soil—024X020N; Veta soil—024X005N

1392—Rock outcrop-Loncan Variant-Glean association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 8,000 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Rock outcrop—40 percent
• Loncan Variant gravelly silt loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—25 percent
• Glean gravelly sandy loam, 30 to 50 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Lithic Haploxerolls, 30 to 50 percent slopes—Lithic Haploxerolls, sandy-skeletal, mixed, frigid—10 percent
• Inclusion 2: Lithic Haploxerolls, 50 to 75 percent slopes—Lithic Haploxerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 3: Cleavage extremely gravelly silt loam, 15 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of Rock Outcrop

Position on landscape: Rimrock on crests and peaks of mountains
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: None

Characteristics of the Loncan Variant Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum and colluvium; source—chert
Slope features: Length—long; shape—convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper, black sagebrush

Typical Profile

0 to 12 inches—gravelly silt loam; 0 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM, ML; estimated AASHTO classification—A-4
12 to 32 inches—very gravelly loam, extremely gravelly sandy loam; 10 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2
32 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.1 to 5.0 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: C

Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Glean Soil

Position on landscape: Back slopes of mountains
Parent material: Kind—residuum and colluvium; source—various kinds of rock
Slope features: Length—long; shape—concave
Dominant present vegetation: Idaho fescue, mountain big sagebrush

Typical Profile

0 to 6 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2, A-4
6 to 49 inches—very gravelly loam, very gravelly sandy loam; 0 to 25 percent cobbles and stones and 40 to 75 percent pebbles (by weight); massive; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
49 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.1 to 5.0 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.15; T value—3; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Shoulders below peaks of mountains
Contrasting features: Shallow to bedrock
Distinctive present vegetation: Singleleaf pinyon, mountain big sagebrush, bluegrass
Inclusion 2
Position on landscape: Shoulders below rimrock of mountains
Contrasting features: Slopes of 50 to 75 percent
Distinctive present vegetation: Black sagebrush, Idaho fescue
Inclusion 3
Position on landscape: Crests of mountains
Contrasting features: Bedrock within a depth of 20 inches
Distinctive present vegetation: Low sagebrush, black sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Site index for common trees on the Loncan Variant Soil: Singleleaf pinyon—40; Utah Juniper—40
Most important native understory plants: Black sagebrush, bluegrass

Wildlife habitat elements:
Suitability of the Loncan Variant soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—fair
Suitability of the Glean soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good

Ratings of the Loncan Variant Soil for Selected Uses
Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage

Ratings of the Glean Soil for Selected Uses
Range seeding: Fair—droughty, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Rock outcrop—VIIIs; Loncan Variant soil—VIIs, nonirrigated; Glean soil—VIIe, nonirrigated
Range site: Loncan Variant soil—025X063; Glean soil—024X023N
Woodland suitability group: Loncan Variant soil—1r

1400—Koynik, steep-Koynik-Rock outcrop association

Map Unit Setting

Position on landscape: Low mountains and foothills
Elevation: 4,900 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Koynik very cobbly very fine sandy loam, 30 to 50 percent slopes—Lithic Torriorthents, loamy-skeletal, carbonatic, mesic—40 percent
• Koynik very gravelly very fine sandy loam, 15 to 30 percent slopes—Lithic Torriorthents, loamy-skeletal, carbonatic, mesic—30 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 8 to 30 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—8 percent
• Inclusion 2: Lithic Haplargids, 15 to 50 percent slopes—Lithic Haplargids, loamy, mixed, mesic—4 percent
• Inclusion 3: Typic Durorthids, 15 to 30 percent slopes—Typic Durorthids, loamy-skeletal, mixed, mesic—3 percent

Characteristics of the Koynik, Steep, Soil

Position on landscape: Side slopes of low mountains and foothills
Parent material: Kind—residuum; source—limestone and dolomite
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, ephedra, little rabbitbrush, Sandberg bluegrass
Surface cover: 40 percent pebbles, 10 percent cobbles

Typical Profile

0 to 6 inches—very cobbly very fine sandy loam; 45 to 60 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SM; estimated AASHTO classification—A-2
6 to 8 inches—very gravelly loam, very gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC, GC, SC; estimated AASHTO classification—A-2
8 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.6 to 0.7 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Koynik Soil

Position on landscape: Crests and shoulder slopes of low mountains and foothills
Parent material: Kind—residuum; source—limestone and dolomite
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Sandberg bluegrass

Typical Profile

0 to 6 inches—very gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SM, GM-GC, GM; estimated AASHTO classification—A-1, A-2
6 to 8 inches—very gravelly loam, very gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm);

nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC, GC, SC; estimated AASHTO classification—A-2
8 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.6 to 0.7 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of Rock Outcrop

Position on landscape: Multiple ledges and locally exposed broad bedding planes on low mountains and foothills
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Position on landscape: Irregular to concave, north-facing side slopes and foot slopes of foothills
Contrasting features: Bedrock at a depth of more than 20 inches
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage
Inclusion 2
Position on landscape: Convex, shale bedrock side slope areas of foothills
Contrasting features: Thin layer of clay accumulation above the bedrock
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Stable random areas on foothills
Contrasting features: Duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Koynik, steep, soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Koynik soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Koynik, Steep, Soil for Selected Uses
Range seeding: Poor—too arid, droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones, thin layer

Ratings of the Koynik Soil for Selected Uses
Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Koynik, steep, soil—VIIs, nonirrigated; Koynik soil—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Koynik, steep, soil—024X002N; Koynik soil—024X002N

1410—Bojo-Stingdorn association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Bojo fine sandy loam, 8 to 30 percent slopes,

extremely stony—Lithic Haplargids, loamy, mixed, mesic—55 percent
• Stingdorn gravelly loam, 4 to 15 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic, shallow—30 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—7 percent
• Inclusion 2: Typic Durorthids, 2 to 8 percent slopes—Typic Durorthids, loamy, mixed, mesic, shallow—4 percent
• Inclusion 3: Durixerollic Camborthids, 4 to 15 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—4 percent

Characteristics of the Bojo Soil

Position on landscape: Higher elevation crests and side slopes of foothills
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, little rabbitbrush, littleleaf horsebrush, bottlebrush squirreltail
Rock fragments on surface: Kind—stones; percentage of surface covered—5

Typical Profile

0 to 4 inches—fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
4 to 10 inches—sandy clay loam, clay loam; 0 to 5 percent cobbles and stones and 10 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-6
10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 7 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.5 inches
Water-supplying capacity: 7 inches
Runoff: Medium to rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Stingdorn Soil

Position on landscape: Broad, stable crests and lower elevation side slopes of foothills
Parent material: Kind—residuum; source—rhyolitic tuffs
Slope features: Length—short; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—gravelly loam; 5 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2, A-4
7 to 15 inches—very cobbly clay loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC; estimated AASHTO classification—A-6
15 to 20 inches—indurated duripan
20 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.7 to 2.1 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Broad, locally exposed bedrock rims of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 2
Position on landscape: Smooth summits of foothills
Contrasting features: Lacks a layer of clay accumulation
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Concave drainageways of foothills
Contrasting features: Very deep soils, receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Bojo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Stingdorn soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Bojo Soil for Selected Uses
Range seeding: Too arid, droughty, rooting depth
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Stingdorn Soil for Selected Uses
Range seeding: Poor—too arid, droughty
Daily cover for landfill: Poor—depth to bedrock, large stones
Shallow excavations: Severe—depth to bedrock, cemented pan
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, large stones, cemented pan
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Bojo soil—VIIs, nonirrigated; Stingdorn soil—VIIs, nonirrigated
Range site: Bojo soil—024X020N; Stingdorn soil—024X002N

1411—Bojo-Rock outcrop-Osoll association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Bojo gravelly sandy loam, 15 to 75 percent slopes, rubbly—Lithic Haplargids, loamy, mixed, mesic—50 percent
• Rock outcrop—20 percent
• Osoll gravelly loam, 15 to 30 percent slopes—Typic Durorthids, loamy-skeletal, mixed, mesic, shallow—15 percent
Contrasting inclusions:
• Inclusion 1: Duric Natrargids, 8 to 15 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—6 percent
• Inclusion 2: Duric Camborthids, 15 to 30 percent slopes—Duric Camborthids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 3: Colbar very gravelly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—3 percent

Characteristics of the Bojo Soil

Position on landscape: Side slopes of foothills
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—long; shape—irregularly shaped
Dominant present vegetation: Wyoming big sagebrush, little rabbitbrush, bottlebrush squirreltail, Sandberg bluegrass
Rock fragments on surface: Kind—stones; percentage of surface covered—5

Typical Profile

0 to 4 inches—gravelly sandy loam; 25 to 40 percent cobbles and stones and 20 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
4 to 10 inches—sandy clay loam, clay loam; 0 to 5 percent cobbles and stones and 10 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH

8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-6
10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 7 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.3 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—4
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of Rock Outcrop

Position on landscape: Steep cliffs on upper side slopes of foothills
Slope features: Length—short; shape—convex
Dominant present vegetation: None

Characteristics of the Osoll Soil

Position on landscape: Predominantly south- and west-facing, lower, colluvial side slopes of foothills
Parent material: Kind—residuum and colluvium; source—tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—gravelly loam; 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, CL-ML; estimated AASHTO classification—A-4
5 to 12 inches—very gravelly loam, very gravelly fine sandy loam; 10 to 25 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
12 to 35 inches—indurated duripan; platy structure; extremely hard, extremely firm
35 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 14 inches
Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 0.9 to 1.3 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex, lower side slopes and foot slopes of foothills
Contrasting features: Deep soil that has a sodium-affected subsoil layer
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Slightly convex, south-facing, lower side slopes and foot slopes of foothills
Contrasting features: Very deep
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Convex, north-facing, lower side slopes of foothills
Contrasting features: Bedrock at a depth of 20 to 40 inches
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Bojo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Osoll soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Bojo Soil for Selected Uses
Range seeding: Too arid, droughty, rooting depth
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope

Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Osoll Soil for Selected Uses

Range seeding: Poor—too arid, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, cemented pan, slope
Local roads and streets: Severe—slope, cemented pan
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, cemented pan
Pond reservoir areas: Severe—slope, cemented pan
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Bojo soil—VIIs, nonirrigated; Rock outcrop VIIIs; Osoll soil—VIIe, nonirrigated
Range site: Bojo soil—024X020N; Osoll soil—024X002N

1412—Bojo-Humdun-Boulflat association

Map Unit Setting

Position on landscape: Foothills
Elevation: 4,800 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Bojo very gravelly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy, mixed, mesic—40 percent
• Humdun silt loam, gravelly substratum, 15 to 50 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, frigid—30 percent
• Boulflat gravelly loam, 15 to 30 percent slopes—Haploxerollic Durargids, fine-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Havingdon gravelly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—5 percent
• Inclusion 2: Xeric Torriorthents, 15 to 30 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—4 percent
• Inclusion 3: Xerollic Haplargids, 2 to 8 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—1 percent

Characteristics of the Bojo Soil

Position on landscape: South-facing side slopes of foothills
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, Wyoming big sagebrush, bottlebrush squirreltail
Rock fragments on surface: Kind—stones; percentage of surface covered—5

Typical Profile

0 to 5 inches—very gravelly loam; 10 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
5 to 8 inches—gravelly clay loam, gravelly loam; 0 to 10 percent cobbles and stones and 15 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC, CL; estimated AASHTO classification—A-7
8 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.5 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Humdun Soil

Position on landscape: North-facing side slopes of foothills
Parent material: Kind—loess influenced by volcanic ash over residuum; source—volcanic rock
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, bluebunch wheatgrass, Sandberg bluegrass

Typical Profile

0 to 6 inches—silt loam; platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

6 to 24 inches—loam, very fine sandy loam, silt loam; massive; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

24 to 41 inches—loam, very fine sandy loam, silt loam; massive; soft, very friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

41 to 60 inches or more—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 10.3 to 12.1 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Boulflat Soil

Position on landscape: Crest and shoulder slopes of foothills
Parent material: Kind—residuum influenced by loess and volcanic ash; source—chert, shale, and quartzite
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluebunch wheatgrass, Sandberg bluegrass

Typical Profile

0 to 6 inches—gravelly loam; 25 to 50 percent pebbles (by weight); granular structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-4

6 to 23 inches—gravelly clay loam, gravelly loam, gravelly sandy clay loam; 25 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6

23 to 32 inches—strongly cemented duripan

32 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 20 to 34 inches
Depth to bedrock: 22 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.4 to 4.1 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper, south-facing side slopes of foothills
Contrasting features: Clayey layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass

Inclusion 2
Position on landscape: Incipient drainageways on north-facing side slopes of foothills
Contrasting features: Very deep soils that have gravelly sandy loam throughout the profile
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 3
Position on landscape: Canyon foot slopes between foothills
Contrasting features: Very deep soils, receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Bojo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Humdun soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Boulflat soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Bojo Soil for Selected Uses
Range seeding: Too arid, droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Humdun Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—seepage

Ratings of the Boulflat Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Bojo soil—VIIs, nonirrigated; Humdun soil—VIIe, nonirrigated; Boulflat soil—VIe, nonirrigated
Range site: Bojo soil—024X026N; Humdun soil—024X005N; Boulflat soil—024X005N

1420—Sumine-Reluctan-Cleavage association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,200 to 7,400 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Sumine very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—40 percent
• Reluctan very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—30 percent
• Cleavage very cobbly loam, 15 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Softscrabble cobbly loam, 4 to 15 percent slopes—Pachic Argixerolls, loamy-skeletal, mixed, frigid—9 percent
• Inclusion 2: Lithic Xerollic Haplargids, 2 to 8 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 3: Rock outcrop—2 percent
• Inclusion 4: Rubble land—1 percent

Characteristics of the Sumine Soil

Position on landscape: Predominantly south-facing side slopes of mountains
Parent material: Kind—colluvium and residuum; source—quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, pine bluegrass, bottlebrush squirreltail

Typical Profile

0 to 10 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 40 to 55 percent pebbles (by weight); granular structure; soft, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.8);

nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.8 to 4.1 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Reluctan Soil

Position on landscape: Predominantly north-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—rhyolitic rock
Slope features: Length—long; shape—smooth to slightly concave
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very gravelly loam; 10 to 25 percent cobbles and stones and 45 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4, A-2
8 to 33 inches—gravelly clay loam, gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
33 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.0 to 5.2 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Cleavage Soil

Position on landscape: Crests, shoulders, and upper side slopes of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, black sagebrush, Sandberg bluegrass, bottlebrush squirreltail, phlox

Typical Profile

0 to 4 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 35 to 55 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2, A-4, A-6
4 to 15 inches—extremely cobbly sandy clay loam, very gravelly clay loam, very cobbly clay loam; 25 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, incipient drainageways of mountains
Contrasting features: Thick, dark colored surface layer, higher water-supplying capacity
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue, bluebunch wheatgrass

Inclusion 2
Position on landscape: Smooth to slightly convex, lower crests of mountains
Contrasting features: Shallow soils that have a thin surface layer
Distinctive present vegetation: Black sagebrush, pine bluegrass

Inclusion 3
Position on landscape: Random small peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 4
Position on landscape: Rock stripes on mountain side slopes below rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Reluctan Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Cleavage Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Sumine soil—VIIs, nonirrigated; Reluctan soil—VIIs, nonirrigated; Cleavage soil—VIIs, nonirrigated
Range site: Sumine soil—024X029N; Reluctan soil—024X021N; Cleavage soil—024X016N

1421—Sumine-Softscrabble-Walti association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,400 to 7,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Sumine very cobbly loam, 50 to 75 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—35 percent
• Softscrabble cobbly loam, 30 to 50 percent slopes—Pachic Argixerolls, loamy-skeletal, mixed, frigid—25 percent
• Walti very cobbly loam, 8 to 15 percent slopes—Aridic Argixerolls, fine, montmorillonitic, frigid—25 percent

Contrasting inclusions:
• Inclusion 1: Rubble land—6 percent
• Inclusion 2: Lithic Xerollic Haplargids, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Rock outcrop—4 percent

Characteristics of the Sumine Soil

Position on landscape: North- and west-facing side slopes of mountains
Parent material: Kind—colluvium and residuum; source—quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, Sandberg bluegrass, bluebunch wheatgrass

Typical Profile

0 to 10 inches—very cobbly loam; 30 to 55 percent cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly clay loam, very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.5 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Softscrabble Soil

Position on landscape: East-facing side slopes and snow pockets on mountains
Parent material: Kind—colluvium and residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, Sandberg bluegrass, Idaho fescue, Thurber needlegrass

Typical Profile

0 to 16 inches—cobbly loam; 25 to 40 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
16 to 30 inches—very cobbly clay loam; 30 to 45 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7
30 to 60 inches or more—very gravelly clay loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.3 to 8.4 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Walti Soil

Position on landscape: Crest and shoulder slopes of mountains
Parent material: Kind—residuum; source—rhyolite, tuffs, and quartzite
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, Idaho fescue

Typical Profile

0 to 4 inches—very cobbly loam; 30 to 40 percent cobbles and stones and 20 to 35 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

4 to 10 inches—gravelly clay loam, clay loam; 0 to 10 percent cobbles and stones and 10 to 35 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 6.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6

10 to 30 inches—clay; gravelly clay; 0 to 10 percent cobbles and stones and 10 to 35 percent pebbles (by weight); prismatic structure; very hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH, MH; estimated AASHTO classification—A-7

30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.7 to 4.8 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Rock stripes on side slopes of mountains
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Inclusion 2
Position on landscape: Convex, lower crests and shoulder slopes of mountains
Contrasting features: Bedrock at a depth of 14 to 20 inches
Distinctive present vegetation: Low sagebrush, black sagebrush, small rabbitbrush

Inclusion 3
Position on landscape: Ridges, spurs, and cliffs of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Softscrabble soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Walti soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Softscrabble Soil for Selected Uses
Range seeding: Fair—erodes easily, large stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Ratings of the Walti Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack
Shallow excavations: Severe—depth to bedrock

Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—low strength, depth to bedrock, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Sumine soil—VIIs, nonirrigated; Softscrabble soil—VIIs, nonirrigated; Walti soil—VIIs, nonirrigated
Range site: Sumine soil—024X029N; Softscrabble soil—024X021N; Walti soil—024X027N

1422—Sumine-Hapgood-Cleavage association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,300 to 8,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Sumine very cobbly loam, 50 to 75 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—35 percent
• Hapgood very gravelly loam, 50 to 75 percent slopes—Pachic Cryoborolls, loamy-skeletal, mixed—30 percent
• Cleavage extremely gravelly loam, 15 to 50 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Glean gravelly silt loam, 50 to 75 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Loncan extremely stony loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Rock outcrop—4 percent
• Inclusion 4: Cumulic Haploxerolls, 2 to 15 percent slopes—Cumulic Haploxerolls, loamy-skeletal, mixed, frigid—1 percent

Characteristics of the Sumine Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—quartzite
Slope features: Length—short; shape—convex
Dominant present vegetation: Mountain big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, Idaho fescue, arrowleaf balsamroot

Typical Profile

0 to 10 inches—very cobbly loam; 30 to 55 percent cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly clay loam, very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.5 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Very rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Hapgood Soil

Position on landscape: Snow pockets and north-facing side slopes of mountains
Parent material: Kind—colluvium influenced by volcanic ash; source—extrusive volcanic rock
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Mountain big sagebrush, snowberry, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 17 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles

(by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

17 to 40 inches—very gravelly loam; 5 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2

40 to 60 inches or more—very cobbly loam, very gravelly loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 4.8 to 6.0 inches
Water-supplying capacity: 16 inches
Runoff: Very rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Cleavage Soil

Position on landscape: Crests and shoulder slopes of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, black sagebrush, Sandberg bluegrass, Idaho fescue

Typical Profile

0 to 4 inches—extremely gravelly loam; 0 to 10 percent cobbles and stones and 75 to 85 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 0 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave, lower snow pockets of mountains
Contrasting features: Thick, dark colored surface layer
Distinctive present vegetation: Mountain big sagebrush, snowberry, lanceleaf rabbitbrush

Inclusion 2
Position on landscape: Lower, north-facing side slopes of mountains
Contrasting features: Soils do not have layer of clay accumulation, bedrock at a depth of 20 to 40 inches
Distinctive present vegetation: Mountain big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass

Inclusion 3
Position on landscape: Random small peaks and ridges of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 4
Position on landscape: Drainageways of mountains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, rubber rabbitbrush, Idaho fescue, bluebunch wheatgrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Hapgood soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Hapgood Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Ratings of the Cleavage Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Sumine soil—VIIs, nonirrigated; Hapgood soil—VIIs, nonirrigated; Cleavage soil—VIIe, nonirrigated
Range site: Sumine soil—024X029N; Hapgood soil—024X032N; Cleavage soil—024X016N

1423—Sumine-Chen-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,700 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 85 days

Composition

Major components:
• Sumine very cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—35 percent
• Chen very gravelly loam, 2 to 8 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—25 percent
• Rock outcrop—25 percent
Contrasting inclusions:
• Inclusion 1: Rubble land—5 percent
• Inclusion 2: Pachic Haploxerolls, 30 to 50 percent slopes—Pachic Haploxerolls, fine-loamy, mixed, frigid—5 percent
• Inclusion 3: Aridic Haploxerolls, 8 to 15 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent

Characteristics of the Sumine Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum and colluvium; source—quartzite, breccia, and sandstone
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, basin wildrye

Typical Profile

0 to 10 inches—very cobbly loam; 30 to 55 percent cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly clay loam, very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles

(by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.1 to 3.2 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Chen Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum influenced by loess and volcanic ash; source—andesite
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass

Typical Profile

0 to 7 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 6.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
7 to 15 inches—very cobbly clay, very gravelly clay, extremely gravelly clay; 0 to 45 percent cobbles and stones and 55 to 75 percent pebbles (by weight); angular blocky structure; hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-7
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 1.1 to 1.7 inches
Water-supplying capacity: 10 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of Rock Outcrop

Position on landscape: Shoulders, cliffs on canyon walls, and scattered peaks of mountains
Slope features: Length—short; shape—convex
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Position on landscape: Screes below rock outcrops on side slopes of mountains
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Concave snow pockets on side slopes of mountains
Contrasting features: Thick, dark colored surface layer
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue, bluebunch wheatgrass
Inclusion 3
Position on landscape: Toe slopes and canyon bottoms of mountains
Contrasting features: Very deep
Distinctive present vegetation: Mountain big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Chen soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Chen Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, too clayey
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Sumine soil—VIIs, nonirrigated; Chen soil—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Sumine soil—024X029N; Chen soil—024X027N

1425—Sumine-Loncan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 7,000 to 7,900 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 70 days

Composition

Major components:
• Sumine very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—45 percent
• Loncan very gravelly very fine sandy loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—40 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 8 to 15 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—10 percent
• Inclusion 2: Rubble land—3 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Sumine Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—colluvium and residuum; source—quartzite and sandstone
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 10 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 40 to 55 percent pebbles (by weight); granular structure; soft, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.8 to 4.1 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Loncan Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope feature: Length—short; shape—convex
Dominant present vegetation: Idaho fescue, mountain big sagebrush, antelope bitterbrush

Typical Profile

0 to 14 inches—very gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 55 to 70 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GM; estimated AASHTO classification—A-1, A-2
14 to 31 inches—very gravelly loam, extremely cobbly

loam, very gravelly sandy clay loam; 10 to 45 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

31 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 21 to 38 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.1 to 3.6 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Crests of mountains
Contrasting features: Bedrock within a depth of 20 inches
Distinctive present vegetation: Low sagebrush, black sagebrush

Inclusion 2
Position on landscape: Rock stringers below rock outcrop and on side slopes of mountains
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Rimrock and scattered peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Loncan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Loncan Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer, large stones

Interpretive Groups

Capability classification: Sumine soil—VIIIs, nonirrigated; Loncan soil—VIIs, nonirrigated
Range site: Sumine soil—025X009N; Loncan soil—025X012N

1426—Sumine-Cleavage-Loncan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,200 to 7,400 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Sumine gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—35 percent
• Cleavage extremely gravelly loam, 15 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—30 percent
• Loncan gravelly loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Cleavage extremely gravelly loam, 30 to

50 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed frigid—6 percent
• Inclusion 2: Rock outcrop—4 percent
• Inclusion 3: Aridic Haploxerolls, 30 to 50 percent slopes—Aridic Haploxerolls, coarse-loamy, mixed, frigid—3 percent
• Inclusion 4: Cumulic Haploxerolls, 4 to 8 percent slopes—Cumulic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Sumine Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—quartzite and breccia
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, antelope bitterbrush

Typical Profile

0 to 10 inches—gravelly loam; 25 to 50 percent pebbles (by weight); platy structure; soft, friable; neutral (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-SM; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly clay loam, very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.5 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Cleavage Soil

Position on landscape: Crest and shoulder slopes of mountains
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, black sagebrush, bluegrass, Idaho fescue

Typical Profile

0 to 4 inches—extremely gravelly loam; 0 to 10 percent cobbles and stones and 75 to 85 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 0 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Loncan Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—chert
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Mountain big sagebrush, Idaho fescue, antelope bitterbrush

Typical Profile

0 to 14 inches—gravelly loam; 0 to 15 percent cobbles

and stones and 25 to 40 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6

14 to 31 inches—very gravelly loam, extremely cobbly loam, very gravelly sandy clay loam; 10 to 55 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

31 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 21 to 38 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.3 to 3.8 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper side slopes of mountains
Contrasting features: Slopes of 30 to 50 percent
Distinctive present vegetation: Low sagebrush, bluegrass

Inclusion 2
Position on landscape: Random small peaks and ridges of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Concave, north-facing snow pockets on side slopes of mountains
Contrasting features: Receives additional soil moisture from snow drifts
Distinctive present vegetation: Antelope bitterbrush, mountain big sagebrush

Inclusion 4
Position on landscape: Small catch basins and canyon bottoms of mountains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Alpine timothy, Nevada bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Loncan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Cleavage Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Loncan Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer, large stones

Interpretive Groups

Capability classification: Sumine soil—VIIe, nonirrigated; Cleavage soil—VIIs, nonirrigated; Loncan soil—VIIe, nonirrigated
Range site: Sumine soil—025X009N; Cleavage soil—025X024N; Loncan soil—025X012N

1427—Sumine-Itca-Softscrabble association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,800 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 70 days

Composition

Major components:
• Sumine very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—50 percent
• Itca very cobbly loam, 30 to 50 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—20 percent
• Softscrabble gravelly loam, 15 to 50 percent slopes—Pachic Argixerolls, loamy-skeletal, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—6 percent
• Inclusion 2: Lithic Xerollic Haplargids, 15 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—4 percent
• Inclusion 3: Welch loam, drained, 2 to 8 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed, frigid—3 percent
• Inclusion 4: Rubble land—2 percent

Characteristics of the Sumine Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—tuffs and breccia
Slope features: Length—long; shape—smooth to convex
Dominant present vegetation: Mountain big sagebrush, Thurber needlegrass, bluebunch wheatgrass, oceanspray, invading singleleaf pinyon, and Utah juniper

Typical Profile

0 to 10 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 40 to 55 percent pebbles (by weight); granular structure; soft, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.8 to 4.1 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Itca Soil

Position on landscape: Shoulders and upper side slopes of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Idaho fescue, singleleaf pinyon, mountain big sagebrush

Typical Profile

0 to 9 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-4, A-6
9 to 17 inches—very gravelly clay, very cobbly clay loam; 0 to 55 percent cobbles and stones and 25 to

70 percent pebbles (by weight); prismatic structure; hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL, GC; estimated AASHTO classification—A-7, A-2

17 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.8 to 2.3 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Softscrabble Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—colluvium and residuum; source—extrusive volcanic rock
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, pine bluegrass, currant, basin wildrye, Idaho fescue, bottlebrush squirreltail

Typical Profile

0 to 16 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4

16 to 30 inches—very cobbly clay loam; 30 to 45 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7

30 to 60 inches or more—gravelly clay loam; 5 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.1 to 8.2 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Random small peaks and ridges of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 2
Position on landscape: Convex, broad crests and shoulders of mountains
Contrasting features: Bedrock at a depth of 10 to 20 inches, loamy subsoil
Distinctive present vegetation: Low sagebrush, bluegrass

Inclusion 3
Position on landscape: Concave drainageways along canyon bottoms of mountains
Contrasting features: Very deep and somewhat poorly drained
Distinctive present vegetation: Basin big sagebrush, basin wildrye, rose

Inclusion 4
Position on landscape: Rock screes on side slopes of mountains
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat
Site index for common trees on the Itca Soil: Singleleaf pinyon—65; Utah juniper—65
Most important native understory plants: Thurber needlegrass, bluebunch wheatgrass, Idaho fescue, bluegrass, mountain big sagebrush, snowberry, lupine, curlleaf mountainmahogany

Wildlife habitat elements:
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Itca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Softscrabble soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Itca Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, too clayey, small stones
Shallow excavations: Severe—depth to bedrock, slope, large stones
Local roads and streets: Severe—depth to bedrock, slope, large stones
Roadfill: Poor—depth to bedrock, large stones, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Softscrabble Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Interpretive Groups

Capability classification: Sumine soil—VIIs, nonirrigated; Itca soil—VIIs, nonirrigated; Softscrabble soil—VIIe, nonirrigated
Range site: Sumine soil—024X029N; Itca soil—025X061N; Softscrabble soil—024X021N
Woodland suitability group: Itca soil—2R

1428—Sumine-Rubble land-Cleavage association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,400 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Sumine very gravelly loam, 50 to 75 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—40 percent
• Rubble land—30 percent
• Cleavage extremely gravelly loam, 15 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Aridic Argixerolls, 30 to 50 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—8 percent
• Inclusion 2: Rock outcrop—5 percent
• Inclusion 3: Aridic Haploxerolls, 50 to 75 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Sumine Soil

Position on landscape: Predominantly south- and west-facing side slopes of mountains
Parent material: Kind—colluvium and residuum; source—breccias
Slope features: Length—long; shape—smooth to convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, basin wildrye, Idaho fescue

Typical Profile

0 to 10 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 40 to 55 percent pebbles (by weight); granular structure; soft, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35

to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7

30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.8 to 4.1 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of Rubble Land

Position on landscape: Screes on side slopes of mountains
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: None

Characteristics of the Cleavage Soil

Position on landscape: Windswept crests and shoulder slopes of mountains
Parent material: Kind—residuum and colluvium; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, black sagebrush, bluegrass, low rabbitbrush

Typical Profile

0 to 4 inches—extremely gravelly loam; 0 to 10 percent cobbles and stones and 75 to 85 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 0 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing side slopes of mountains
Contrasting features: Deep soils that have a clay loam layer of clay accumulation
Distinctive present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Idaho fescue

Inclusion 2
Position on landscape: Rimrock on side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Smooth to concave areas below rock outcrop and scree slopes of mountains
Contrasting features: Deep soils that are gravelly loam throughout the profile
Distinctive present vegetation: Common chokecherry, currant, snowberry

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—small stones, erodes easily

Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Cleavage Soil for Selected Uses

Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Sumine soil—VIIs, nonirrigated; Rubble land—VIIIs; Cleavage soil—VIIs, nonirrigated
Range site: Sumine soil—024X029N; Cleavage soil—024X016N

1429—Sumine-Winada Variant-Pernty association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 9,200 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 70 days

Composition

Major components:
• Sumine very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—40 percent
• Winada Variant very gravelly fine sandy loam, 30 to 50 percent slopes—Argic Cryoborolls, loamy-skeletal, mixed—25 percent
• Pernty very gravelly sandy loam, 30 to 50 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—25 percent

Contrasting inclusions:
• Inclusion 1: Cleavage extremely gravelly sandy loam, 30 to 50 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Rock outcrop—5 percent

Characteristics of the Sumine Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—quartzite
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Mountain big sagebrush, rabbitbrush, bluebunch wheatgrass

Typical Profile

0 to 10 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 40 to 55 percent pebbles (by weight); granular structure; soft, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.8 to 4.1 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Winada Variant Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—chert

Slope features: Length—short; shape—concave
Dominant present vegetation: Idaho fescue, mountain big sagebrush, mountain brome, serviceberry

Typical Profile

0 to 7 inches—very gravelly fine sandy loam; 5 to 10 percent cobbles and stones and 55 to 70 percent pebbles (by weight); granular structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
7 to 24 inches—very gravelly sandy clay loam; 5 to 10 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
24 to 45 inches—extremely gravelly loam; 5 to 15 percent cobbles and stones and 75 to 85 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
45 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.2 to 4.6 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—3; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Pernty Soil

Position on landscape: Shoulders and upper side slopes of mountains
Parent material: Kind—residuum; source—chert and quartzite
Slope features: Length—short; shape—convex
Dominant present vegetation: Mountain big sagebrush, snowberry, rabbitbrush, bluebunch wheatgrass
Surface cover: 25 percent pebbles

Typical Profile

0 to 3 inches—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2
3 to 14 inches—very gravelly clay loam, very gravelly loam, very cobbly clay loam; 10 to 30 percent cobbles and stones and 45 to 55 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-7, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex ridges and crests of mountains
Contrasting features: Extremely gravelly surface layer
Distinctive present vegetation: Low sagebrush, Idaho fescue, Sandberg bluegrass
Inclusion 2
Position on landscape: Rimrock and extremely eroded side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Sumine soil for named elements: Wild

herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Winada Variant soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good
Suitability of the Pernty soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Winada Variant Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer

Ratings of the Pernty Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope, depth to bedrock
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Sumine soil—VIIs, nonirrigated; Winada Variant soil—VIIs, nonirrigated; Pernty soil—VIIs, nonirrigated
Range site: Sumine soil—024X029N; Winada Variant soil—024X032N; Pernty soil—024X021N

1450—Atlow, steep-Atlow-Stingdorn association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,200 to 6,100 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Atlow very gravelly loam, 15 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—45 percent
• Atlow very gravelly loam, 8 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—20 percent
• Stingdorn cobbly loam, 15 to 30 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Colbar gravelly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—5 percent
• Inclusion 2: Xerollic Haplargids, 15 to 30 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Xeric Torriorthents, 4 to 15 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Atlow, Steep, Soil

Position on landscape: Predominantly north- and east-facing side slopes of foothills
Parent material: Kind—residuum; source—chert, shale, and rhyolitic tuffs
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Douglas rabbitbrush, ephedra, Utah juniper

Typical Profile

0 to 3 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
3 to 14 inches—very gravelly clay loam, very cobbly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline

(pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.3 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Atlow Soil

Position on landscape: Crests and shoulder slopes of foothills
Parent material: Kind—residuum; source—cherts, shales, and rhyolitic tuffs
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, Douglas rabbitbrush, bottlebrush squirreltail, ephedra, Utah juniper

Typical Profile

0 to 3 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
3 to 14 inches—very gravelly clay loam, very cobbly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.3 inches
Water-supplying capacity: 8 inches
Runoff: Moderately rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Stingdorn Soil

Position on landscape: South- and west-facing, lower side slopes of foothills
Parent material: Kind—residuum; source—rhyolitic tuffs
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—cobbly loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
7 to 15 inches—very cobbly clay loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC; estimated AASHTO classification—A-6
15 to 20 inches—indurated duripan; massive; extremely hard, extremely firm
20 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.7 to 2.1 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave, north-facing side slopes and foot slopes of foothills
Contrasting features: Bedrock at a depth of 20 to 40 inches
Distinctive present vegetation: Wyoming big sagebrush, bluegrass
Inclusion 2
Position on landscape: Convex, upper, south-facing side slopes of foothills
Contrasting features: Duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Black sagebrush, bluegrass
Inclusion 3
Position on landscape: Concave drainageways of foothills
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Atlow, steep, soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Stingdorn soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Atlow, Steep, Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Atlow Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, cemented pan
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Stingdorn Soil for Selected Uses
Range seeding: Poor—too arid, droughty
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—depth to bedrock, slope, cemented pan
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, large stones
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Atlow, steep, soil—VIIe, nonirrigated; Atlow soil—VIIs, nonirrigated; Stingdorn soil—VIIe, nonirrigated
Range site: Atlow, steep, soil—024X030N; Atlow soil—024X030N; Stingdorn soil—024X002N

1451—Atlow-Reluctan-Trunk association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,800 to 6,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Atlow very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—35 percent
• Reluctan cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—30 percent
• Trunk very cobbly loam, 15 to 30 percent slopes—

Xerollic Haplargids, fine, montmorillonitic, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Perwick very gravelly loam, 50 to 75 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—8 percent
• Inclusion 2: Aridic Haploxerolls, 15 to 30 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Atlow Soil

Position on landscape: Shoulders and upper side slopes of mountains
Parent material: Kind—residuum; source—chert and rhyolitic tuffs
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, phlox, Sandberg bluegrass, small rabbitbrush

Typical Profile

0 to 3 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
3 to 14 inches—very gravelly clay loam, very cobbly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.3 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Reluctan Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium and residuum; source—rhyolitic rocks
Slope features: Length—short; shape—concave to slightly convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, bluegrass

Typical Profile

0 to 8 inches—cobbly loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
8 to 33 inches—gravelly clay loam, gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
33 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.0 to 5.2 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Trunk Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—colluvium and residuum; source—chert, andesite, and rhyolite
Slope features: Length—long; shape—convex to slightly concave
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, bottlebrush squirreltail, small rabbitbrush, horsebrush

Typical Profile

0 to 5 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 25 to 50 percent pebbles (by weight); granular structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4, A-6

5 to 28 inches—gravelly clay loam, gravelly clay; 0 to 10 percent cobbles and stones and 20 to 50 percent pebbles (by weight); prismatic structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7

28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.1 to 4.0 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, south-facing, eroded side slopes of mountains
Contrasting features: Eroded surface layer
Distinctive present vegetation: Utah juniper, black sagebrush, bluegrass

Inclusion 2
Position on landscape: Concave, high elevation, south-facing back slopes of mountains
Contrasting features: Deep soils that have a dark colored surface layer
Distinctive present vegetation: Mountain big sagebrush, Wyoming big sagebrush, bluebunch wheatgrass

Inclusion 3
Position on landscape: Random small peaks, ridges, and severely eroded side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Atlow Soil for Selected Uses

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Reluctan Soil for Selected Uses

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Trunk Soil for Selected Uses

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—low strength, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Atlow soil—VIIe, nonirrigated; Reluctan soil—VIIs, nonirrigated; Trunk soil—VIIs, nonirrigated
Range site: Atlow soil—024X030N; Reluctan soil—024X021N; Trunk soil—024X005N

1452—Atlow-Minat-Old Camp association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,200 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Atlow gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—45 percent
• Minat very gravelly loam, 15 to 30 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—30 percent
• Old Camp very cobbly loam, 8 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Aridic Argixerolls, 15 to 30 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—8 percent
• Inclusion 2: Rock outcrop—2 percent

Characteristics of the Atlow Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—chert, shale, greenstone, and altered rhyolitic tuff

Typical Profile

0 to 3 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC, CL; estimated AASHTO classification—A-6
3 to 14 inches—very gravelly clay loam, very cobbly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.2 to 1.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Minat Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—colluvium influenced by volcanic ash; source—chert and shale
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass, bluebunch wheatgrass

Typical Profile

0 to 9 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2
9 to 27 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
27 to 60 inches or more—very gravelly fine sandy loam, very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.6 to 6.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Old Camp Soil

Position on landscape: Summits of mountain plateaus
Parent material: Kind—residuum; source—ash flow tuffs
Slope features: Length—long; shape—slightly concave to slightly convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, small rabbitbrush, green ephedra

Typical Profile

0 to 3 inches—very cobbly loam; 35 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC, SM-SC, SC; estimated AASHTO classification—A-2, A-4, A-6
3 to 15 inches—very cobbly clay loam; 35 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 1.9 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing side slopes of mountains
Contrasting features: Bedrock at a depth of 20 to 40 inches; thick, dark colored surface layer
Distinctive present vegetation: Mountain big sagebrush, western wheatgrass
Inclusion 2
Position on landscape: Rimrock on shoulder slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Minat soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Atlow Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Minat Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, large stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Atlow soil—VIIe, nonirrigated; Minat soil—VIIs, nonirrigated; Old Camp soil—VIIs, nonirrigated
Range site: Atlow soil—024X030N; Minat soil—024X005N; Old Camp soil—024X047N

1453—Atlow-Colbar-Rock outcrop association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,200 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Atlow very gravelly loam, 15 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—60 percent
• Colbar gravelly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—15 percent
• Rock outcrop—10 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 2: Typic Natrargids, 15 to 50 percent slopes—Typic Natrargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Durixerollic Camborthids, 4 to 15 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—4 percent

Characteristics of the Atlow Soil

Position on landscape: Crests and side slopes of foothills
Parent material: Kind—residuum; source—altered rhyolitic ash flow tuff
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bottlebrush squirreltail, Sandberg bluegrass

Typical Profile

0 to 3 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
3 to 14 inches—very gravelly clay loam, very cobbly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.3 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of foothills
Parent material: Kind—residuum and colluvium; source—rhyolitic tuffs
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, bottlebrush squirreltail, Sandberg bluegrass

Typical Profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SM, GM-GC, GM; estimated AASHTO classification—A-4

3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6

22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4

26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.4 to 3.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of Rock Outcrop

Position on landscape: Scattered peaks of foothills
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave, colluvial back slopes of foothills
Contrasting features: Deep
Distinctive present vegetation: Black sagebrush, bottlebrush squirreltail

Inclusion 2
Position on landscape: Convex, lower side slopes of foothills
Contrasting features: Sodium-affected layer of clay accumulation
Distinctive present vegetation: Shadscale, small rabbitbrush, bud sagebrush

Inclusion 3
Position on landscape: Concave foot slopes of foothills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, Nevada bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Atlow Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Colbar Soil for Selected Uses
Range seeding: Fair—droughty
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, small stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Atlow soil—VIIs, nonirrigated; Colbar soil—VIe, nonirrigated; Rock outcrop—VIIIs

Range site: Atlow soil—024X030N; Colbar soil—024X005N

1532—Cleavage-Rubble land-Bregar association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,200 to 7,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Cleavage very gravelly fine sandy loam, 30 to 50 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—45 percent
• Rubble land—25 percent
• Bregar very gravelly fine sandy loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—8 percent
• Inclusion 2: Locane extremely gravelly sandy loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—7 percent

Characteristics of the Cleavage Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, low sagebrush

Typical Profile

0 to 4 inches—very gravelly fine sandy loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1
4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 25 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of Rubble Land

Position on landscape: Screes on side slopes of mountains
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: None

Characteristics of the Bregar Soil

Position on landscape: Crests and shoulder slopes of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Idaho fescue, low sagebrush, bluegrass, black sagebrush

Typical Profile

0 to 4 inches—very gravelly fine sandy loam; 10 to 20 percent cobbles and stones and 45 to 60 percent pebbles (by weight); platy structure; soft, very friable; slightly acid (pH 6.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GM; estimated AASHTO classification—A-1, A-2
4 to 11 inches—very gravelly clay loam, extremely gravelly loam, very cobbly sandy clay loam; 0 to 40 percent cobbles and stones and 65 to 80 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 12 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None

Permeability: Moderately slow
Available water capacity: 0.9 to 1.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Random small peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: South-facing, lower side slopes of mountains
Contrasting features: Very gravelly clay loam or very gravelly clay layer of clay accumulation
Distinctive present vegetation: Black sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bregar soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Cleavage Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Bregar Soil for Selected Uses
Range seeding: Poor—droughty, small stones, rooting depth
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Cleavage soil—VIIs, nonirrigated; Rubble land—VIIIs; Bregar soil—VIIs, nonirrigated
Range site: Cleavage soil—025X017N; Bregar soil—024X016N

1542—Linrose-Cleavage-Pernty association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,600 to 8,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Linrose gravelly loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—30 percent
• Cleavage very gravelly loam, 30 to 50 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—30 percent
• Pernty very gravelly loam, 30 to 50 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Rubble land—6 percent
• Inclusion 2: Bregar extremely cobbly loam, 30 to 75 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Glean silt loam, 50 to 75 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 4: Aridic Haploxerolls, 30 to 50 percent slopes—Aridic Haploxerolls, fine-loamy, mixed, frigid—1 percent

Characteristics of the Linrose Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—chert and quartzite
Slope features: Length—long; shape—convex

Dominant present vegetation: Idaho fescue, black sagebrush, bluegrass
Surface cover: 30 percent pebbles, 10 percent cobbles

Typical Profile

0 to 8 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, ML; estimated AASHTO classification—A-4
8 to 26 inches—very gravelly loam, very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.4 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Cleavage Soil

Position on landscape: Crest and shoulder slopes of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Dominant present vegetation: Low sagebrush, bluebunch wheatgrass, Idaho fescue

Typical Profile

0 to 4 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2, A-4, A-6
4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 25 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Pernty Soil

Position on landscape: West-, east-, and upper south-facing side slopes of mountains
Parent material: Kind—residuum; source—chert and quartzite
Slope features: Length—long; shape—smooth to slightly concave
Dominant present vegetation: Idaho fescue, bluebunch wheatgrass, basin wildrye

Typical Profile

0 to 3 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
3 to 14 inches—very gravelly clay loam, very gravelly loam, very cobbly clay loam; 10 to 30 percent cobbles and stones and 45 to 55 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-7, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Rock screes on south-facing side slopes of mountains
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Convex lower side slopes of mountains
Contrasting features: Thin, light colored surface layer
Distinctive present vegetation: Black sagebrush, low sagebrush
Inclusion 3
Position on landscape: Concave, north-facing side slopes of mountains
Contrasting features: Deep soil that receives extra moisture from drifted snow
Distinctive present vegetation: Idaho fescue
Inclusion 4
Position on landscape: Lower, south-facing side slopes of mountains
Contrasting features: Deep soils
Distinctive present vegetation: Bluebunch wheatgrass, mountain big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Linrose soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Pernty soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Linrose Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Cleavage Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Pernty Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope, depth to bedrock
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Linrose soil—VIIe, nonirrigated; Cleavage soil—VIIs, nonirrigated; Pernty soil—VIIs, nonirrigated
Range site: Linrose soil—024X042N; Cleavage soil—024X027N; Pernty soil—024X021N

1570—Koynik Variant-Oxcorel-Whirlo association

Map Unit Setting

Position on landscape: Volcanic cones and associated fan piedmonts

Elevation: 4,800 to 5,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Koynik Variant very gravelly sandy loam, 15 to 50 percent slopes, rubbly—Lithic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—35 percent
• Oxcorel cobbly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—30 percent
• Whirlo cobbly very fine sandy loam, 4 to 15 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Camborthids, 50 to 75 percent slopes—Lithic Xerollic Camborthids, loamy-skeletal, mixed, mesic—9 percent
• Inclusion 2: Durorthidic Torriorthents, 2 to 8 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—4 percent
• Inclusion 3: Rock outcrop—1 percent
• Inclusion 4: Rubble land—1 percent

Characteristics of the Koynik Variant Soil

Position on landscape: Side slopes of volcanic cones
Parent material: Kind—ash capped residuum; source—basalt
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, ephedra
Surface cover: 50 percent pebbles, 20 percent cobbles, 15 percent stones

Typical Profile

0 to 5 inches—very gravelly sandy loam; 25 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-1
5 to 13 inches—very gravelly fine sandy loam, very gravelly sandy loam; 0 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1
13 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.6 to 1.1 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Oxcorel Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—cobbly very fine sandy loam; 15 to 30 percent cobbles and stones and 20 to 40 percent pebbles (by weight); platy structure; soft, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-4
8 to 34 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
34 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); nonsaline to slightly saline (2 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 34 inches—very slow; below this depth—moderately rapid

Available water capacity: 5.1 to 7.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Inset fans and alluvial fans below hills
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—irregular

Typical Profile

0 to 7 inches—cobbly very fine sandy loam; 15 to 25 percent cobbles and stones and 10 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
7 to 13 inches—gravelly sandy loam, gravelly loam, fine sandy loam; 0 to 10 percent cobbles and stones and 15 to 45 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM, ML; estimated AASHTO classification—A-2, A-4
13 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 5 to 30 percent cobbles and stones and 50 to 75 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.9 to 5.3 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: North-facing side slopes of volcanic cones
Contrasting features: Slopes of more than 50 percent
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Areas adjacent to concave drainageways of fan piedmont remnants
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Shoulder slopes of volcanic cones
Contrasting features: Bedrock exposed at the soil surface of volcanic cones
Distinctive present vegetation: Barren
Inclusion 4
Position on landscape: Rock stringers on side slopes of volcanic cones
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Koynik Variant soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Koynik Variant Soil for Selected Uses
Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope, depth to bedrock
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—seepage

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones, excess sodium
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—large stones, slope
Local roads and streets: Moderate—large stones, slope
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Koynik Variant soil—VIIs, nonirrigated; Oxcorel soil—VIIs, nonirrigated; Whirlo soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Koynik Variant soil—024X002N; Oxcorel soil—024X002N; Whirlo soil—024X002N

1600—Dumps and Pits, mine

Map Unit Setting

Position on landscape: Hills and fan piedmonts
Elevation: 4,800 to 7,900 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Dumps and Pits, mine—100 percent

Characteristics of Pits and Dumps

Position on landscape: Side slopes of hills and adjacent fan piedmonts
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Barren or annual grasses, forbs, and rabbitbrush

1601—Pits, gravel

Map Unit Setting

Position on landscape: Fan piedmonts or beach plains
Elevation: 4,400 to 6,800 feet
Average annual precipitation: About 7 to 12 inches
Average annual air temperature: About 42 to 48 degrees F
Frost-free season: About 80 to 120 days

Composition

Major components:
• Pits, gravel—100 percent

Characteristics of Pits, Gravel

Position on landscape: Fan piedmonts or beach plains
Parent material: Mixed alluvium or lacustrine beach deposits
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: None

1662—Floer-Slaven-Roca association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Floer gravelly silt loam, 8 to 15 percent slopes—Aridic Palexerolls, clayey-skeletal, montmorillonitic, frigid—45 percent
• Slaven loam, 15 to 30 percent slopes, very stony—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—20 percent
• Roca very gravelly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Glean gravelly silt loam, 30 to 75 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—10 percent
• Inclusion 2: Linrose gravelly silt loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 3: Durixerollic Haplargids, 15 to 30 percent

slopes—Durixerollic Haplargids, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Floer Soil

Position on landscape: East- and west-facing side slopes of mountains
Parent material: Kind—residuum influenced by loess; source—chert
Slope features: Length—long; shape—concave
Dominant present vegetation: Low sagebrush, Idaho fescue
Surface cover: 30 percent pebbles, 5 percent cobbles and stones

Typical Profile

0 to 12 inches—gravelly silt loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC, SM, SM-SC; estimated AASHTO classification—A-4
12 to 50 inches—very cobbly clay, extremely stony clay; 45 to 55 percent cobbles and stones and 45 to 65 percent pebbles (by weight); prismatic structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
50 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 5.5 to 7.4 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—3; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Moderate

Characteristics of the Slaven Soil

Position on landscape: Upper, south-facing side slopes of mountains
Parent material: Kind—residuum influenced by loess and volcanic ash; source—chert and shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Thurber needlegrass
Rock fragments on surface: Kind—stones; percentage of surface covered—2

Typical Profile

0 to 5 inches—loam; 10 to 25 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
5 to 22 inches—extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam; 75 to 85 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
22 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.0 to 2.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Roca Soil

Position on landscape: Lower, south-facing side slopes of mountains
Parent material: Kind—residuum; source—chert and shale
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Wyoming and mountain big sagebrush, bluegrass, bluebunch wheatgrass

Typical Profile

0 to 5 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
5 to 27 inches—very gravelly clay loam, very gravelly

clay; 0 to 15 percent cobbles and stones and 50 to 60 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2

27 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper, concave, north-facing side slopes of mountains
Contrasting features: Thick, dark colored surface layer; higher water-supplying capacity from drifted snow
Distinctive present vegetation: Idaho fescue

Inclusion 2
Position on landscape: Upper, convex, north-facing side slopes of mountains
Contrasting features: Deep soils; very gravelly loam throughout the profile
Distinctive present vegetation: Idaho fescue

Inclusion 3
Position on landscape: Lower, north-facing side slopes of mountains
Contrasting features: Layer of weak silica accumulation
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Floer soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Slaven soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Floer Soil for Selected Uses
Range seeding: Fair—too arid, rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—depth to bedrock, too clayey, slope
Local roads and streets: Severe—shrink-swell
Roadfill: Poor—shrink-swell
Sand: Improbable source—large stones, excess fines
Gravel: Improbable source—large stones, excess fines
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Slaven Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, too clayey, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Roca Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Floer soil—VIIs, nonirrigated; Slaven soil—VIIs, nonirrigated; Roca soil—VIIs, nonirrigated
Range site: Floer soil—024X027N; Slaven soil—025X014N; Roca soil—024X028N

1670—Wieland-Allor association

Map Unit Setting

Position on landscape: Fan piedmonts

Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Wieland loam, 2 to 8 percent slopes—Durixerollic Haplargids, fine, montmorillonitic, mesic—70 percent
• Allor very cobbly loam, 15 to 30 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Orovada fine sandy loam, 2 to 4 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—7 percent
• Inclusion 2: Xerollic Haplargids, 2 to 8 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—5 percent
• Inclusion 3: Durixerollic Camborthids, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—3 percent

Characteristics of the Wieland Soil

Position on landscape: Broad summits of fan piedmont remnants
Parent material: Kind—alluvium; source—extrusive volcanic rock
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—loam; 0 to 25 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
8 to 20 inches—gravelly clay; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); prismatic structure; hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CH, SC; estimated AASHTO classification—A-7
20 to 60 inches or more—loam, gravelly loam, gravelly sandy loam; 0 to 5 percent cobbles and stones and 10 to 45 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.0 to 9.6 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Allor Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, bottlebrush squirreltail, spiny hopsage

Typical Profile

0 to 12 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 55 percent pebbles (by weight); subangular blocky structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-2, A-4
12 to 34 inches—gravelly clay loam, gravelly sandy clay loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-6, A-7
34 to 60 inches or more—gravelly loamy sand, very gravelly loamy sand; 0 to 10 percent cobbles and stones and 35 to 55 percent pebbles (by weight); massive; very hard, firm; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.7 to 6.0 inches

Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Inset fans
Contrasting features: Very gravelly sandy loam throughout the profile
Distinctive present vegetation: Wyoming big sagebrush, small rabbitbrush
Inclusion 2
Position on landscape: Foot slopes of adjacent hills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, rubber rabbitbrush, Wyoming big sagebrush, basin wildrye
Inclusion 3
Position on landscape: Shoulder slopes of fan piedmont remnants
Contrasting features: Lacks layer of clay accumulation, gravelly sandy loam throughout the profile
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Wieland soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Allor soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Wieland Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Moderate—thin layer

Ratings of the Allor Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Fair—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Wieland soil—IIIe, irrigated, and VIs, nonirrigated; Allor soil—VIIs, nonirrigated
Range site: Wieland soil—024X005N; Allor soil—024X005N

1671—Wieland-Oxcorel-Allor association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Wieland loam, 2 to 8 percent slopes—Durixerollic Haplargids, fine, montmorillonitic, mesic—50 percent
• Oxcorel gravelly fine sandy loam, 2 to 4 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—20 percent
• Allor very cobbly loam, 15 to 30 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Durargids, 2 to 8 percent slopes—Xerollic Durargids, fine-loamy, mixed, mesic—5 percent
• Inclusion 2: Xerollic Durargids, 4 to 15 percent slopes—Xerollic Durargids, fine-loamy, mixed, mesic—4 percent
• Inclusion 3: Xeric Torriorthents, 15 to 50 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—3 percent
• Inclusion 4: Xerollic Camborthids, 0 to 4 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—3 percent

Characteristics of the Wieland Soil

Position on landscape: Upper summits of fan piedmont remnants

Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Sandberg bluegrass

Typical Profile

0 to 8 inches—loam; 0 to 25 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
8 to 20 inches—gravelly clay; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); prismatic structure; hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CH, SC; estimated AASHTO classification—A-7
20 to 60 inches or more—loam, gravelly loam, gravelly sandy loam; 0 to 5 percent cobbles and stones and 10 to 45 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.0 to 9.5 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Oxcorel Soil

Position on landscape: Broad, lower summits of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Surface cover: 25 percent pebbles, 5 percent cobbles

Typical Profile

0 to 5 inches—gravelly fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4, A-2
5 to 20 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
20 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 20 inches—very slow; below this depth—moderately rapid
Available water capacity: 4.8 to 6.7 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Allor Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—smooth to slightly concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, small rabbitbrush, spiny hopsage

Typical Profile

0 to 12 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 55 percent pebbles (by weight); subangular blocky structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, GM-GC;

estimated AASHTO classification—A-2, A-4
12 to 34 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-6, A-7
34 to 60 inches or more—gravelly loamy sand, very gravelly loamy sand; 0 to 10 percent cobbles and stones and 35 to 55 percent pebbles (by weight); massive; very hard, firm; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.7 to 6.0 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Highest summits of fan piedmont remnants
Contrasting features: Duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Wyoming big sagebrush, small rabbitbrush

Inclusion 2
Position on landscape: North-facing, upper side slopes of fan piedmont remnants
Contrasting features: Duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Black sagebrush, bottlebrush squirreltail

Inclusion 3
Position on landscape: Convex, eroded escarpments of fan piedmont remnants
Contrasting features: Extremely gravelly throughout the profile
Distinctive present vegetation: Indian ricegrass, Wyoming big sagebrush

Inclusion 4
Position on landscape: Inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Wieland soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Allor soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Wieland Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Moderate—thin layer

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Allor Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope

Roadfill: Fair—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Wieland soil—IIIe, irrigated, and VIs, nonirrigated; Oxcorel soil—IVs, irrigated, and VIIs, nonirrigated; Allor soil—VIIs, nonirrigated
Range site: Wieland soil—024X005N; Oxcorel soil—024X002N; Allor soil—024X005N

1673—Wieland-Grassval-Puett association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 6,000 to 6,400 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Wieland gravelly loam, 8 to 15 percent slopes—Durixerollic Haplargids, fine, montmorillonitic, mesic—40 percent
• Grassval gravelly loam, 2 to 8 percent slopes—Xerollic Durargids, loamy, mixed, mesic, shallow—25 percent
• Puett very gravelly loam, 30 to 50 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Haploxerollic Durargids, 2 to 8 percent slopes—Haploxerollic Durargids, loamy, mixed, mesic, shallow—7 percent
• Inclusion 2: Xeric Torriorthents, 30 to 50 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—4 percent
• Inclusion 3: Aridic Haploxerolls, 2 to 4 percent slopes—Aridic Haploxerolls, coarse-loamy, mixed, mesic—4 percent

Characteristics of the Wieland Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, pine bluegrass, Sandberg bluegrass

Typical Profile

0 to 8 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL, SC; estimated AASHTO classification—A-6
8 to 20 inches—gravelly clay, clay; 0 to 5 percent cobbles and stones and 10 to 45 percent pebbles (by weight); prismatic structure; hard, friable; moderately alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CH, SC; estimated AASHTO classification—A-7
20 to 60 inches or more—loam, gravelly loam, gravelly sandy loam; 0 to 5 percent cobbles and stones and 10 to 45 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.4); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 5.7 to 9.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Grassval Soil

Position on landscape: Summits and south-facing shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 4 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated

Unified classification—SM-SC; estimated AASHTO classification—A-2, A-4

4 to 13 inches—gravelly clay loam, gravelly loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-6

13 inches—indurated duripan; massive

Soil and Water Features

Depth to hardpan: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.9 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Puett Soil

Position on landscape: Side slopes of fan piedmont remnants with a shallow rock core
Parent material: Kind—loamy residuum; source—soft, tuffaceous sedimentary formations
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, Wyoming big sagebrush, Utah juniper

Typical Profile

0 to 4 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-1

4 to 15 inches—coarse sandy loam, gravelly sandy loam, loam; 10 to 50 percent pebbles (by weight); massive; soft, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML, GM; estimated AASHTO classification—A-1, A-2, A-4

15 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1.7 to 2.1 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Crests of fan piedmont remnants
Contrasting features: Strongly cemented duripan at a depth of 10 to 20 inches
Distinctive present vegetation: Wyoming big sagebrush, small rabbitbrush

Inclusion 2
Position on landscape: North-facing, upper elevation side slopes of fan piedmont remnants with a rock core
Contrasting features: Soft bedrock at a depth of 20 to 30 inches
Distinctive present vegetation: Singleleaf pinyon, Utah juniper, Wyoming big sagebrush

Inclusion 3
Position on landscape: Inset fans
Contrasting features: Very deep soils, receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Wieland soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Grassval soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Puett soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Wieland Soil for Selected Uses
Range seeding: Poor—rooting depth

Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer

Ratings of the Grassval Soil for Selected Uses
Range seeding: Poor—droughty, rooting depth
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Puett Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—seepage, piping

Interpretive Groups

Capability classification: Wieland soil—VIs, nonirrigated; Grassval soil—VIIs, nonirrigated; Puett soil—VIIe, nonirrigated
Range site: Wieland soil—024X005N; Grassval soil—024X030N; Puett soil—025X025N

1680—Zineb gravelly loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,800 to 5,300 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Zineb gravelly loam, 2 to 8 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Whirlo gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—10 percent
• Inclusion 2: Xerollic Camborthids, 0 to 4 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Zineb Soil

Position on landscape: Fan skirts
Parent material: Loamy mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, gray horsebrush, Sandberg bluegrass, bottlebrush squirreltail
Surface cover: 20 percent pebbles

Typical Profile

0 to 11 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
11 to 20 inches—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 55 to 75 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-2
20 to 45 inches—extremely cobbly loamy coarse sand, extremely cobbly coarse sand; 50 to 75 percent cobbles and stones or 55 to 85 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1
45 to 60 inches or more—loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; hard, firm; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.3 to 4.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, lower margins of fan skirts
Contrasting features: Lacks layer of weak silica accumulation
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Concave inset fans emerging onto fan skirts
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Zineb Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—seepage, small stones, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, large stones
Roadfill: Fair—large stones
Sand: Improbable source—thin layer
Gravel: Improbable source—thin layer
Topsoil: Poor—small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage, large stones

Interpretive Groups

Capability classification: IVe, irrigated, and VIIs, nonirrigated
Range site: 024X005N

1682—Zineb-Doowak-Oxcorel association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,800 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Zineb gravelly loam, 0 to 2 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—60 percent
• Doowak very gravelly loamy sand, 0 to 2 percent slopes—Xeric Torriorthents, sandy-skeletal, mixed, mesic—15 percent
• Oxcorel gravelly silt loam, 2 to 4 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 0 to 2 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Xerollic Camborthids, 0 to 2 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—3 percent
• Inclusion 3: Xeric Torriorthents, 0 to 2 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—2 percent

Characteristics of the Zineb Soil

Position on landscape: Fan aprons
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass

Typical Profile

0 to 11 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
11 to 20 inches—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 45 to 75 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-2

20 to 45 inches—extremely cobbly loamy coarse sand, extremely cobbly coarse sand; 50 to 75 percent cobbles and stones or 55 to 85 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

45 to 60 inches or more—loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; hard, firm; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.3 to 4.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Doowak Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very gravelly loamy sand; 5 to 10 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

6 to 60 inches or more—stratified extremely gravelly sand to extremely gravelly loamy sand; 5 to 10 percent cobbles and stones and 75 to 90 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Very rapid
Available water capacity: 1.9 to 3.0 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.05; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Oxcorel Soil

Position on landscape: Nonburied fan piedmont remnants
Parent material: Mixed alluvium with a thin loess mantle
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—gravelly silt loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4

8 to 34 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 15 to 30); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

34 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; slightly hard to soft, firm to very friable; strongly alkaline (pH 9.0); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 20 inches—very slow; below this depth—moderately rapid
Available water capacity: 4.8 to 6.7 inches
Water-supplying capacity: 7 inches

Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Areas adjacent to channel banks
Contrasting features: Gravelly sandy loam throughout the profile; lacks layer of weak silica accumulation
Distinctive present vegetation: Wyoming big sagebrush, rabbitbrush
Inclusion 2
Position on landscape: Drainageways on fan aprons
Contrasting features: Gravelly loam throughout the profile
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Upper part of inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Zineb soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Doowak soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Zineb Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—seepage, small stones, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, large stones
Roadfill: Fair—large stones
Sand: Improbable source—thin layer
Gravel: Improbable source—thin layer
Topsoil: Poor—small stones
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—seepage, large stones

Ratings of the Doowak Soil for Selected Uses
Range seeding: Poor—too sandy, droughty, small stones
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Interpretive Groups

Capability classification: Zineb soil—IVs, irrigated, and VIIs, nonirrigated; Doowak soil—VIIs, nonirrigated; Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Zineb soil—024X005N; Doowak soil—024X020N; Oxcorel soil—024X002N

2060—Oxcorel-Beoska-Whirlo association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Oxcorel very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—40 percent
• Beoska silt loam, 0 to 4 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—30 percent

• Whirlo gravelly loam, 2 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 15 to 30 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Typic Torriorthents, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 3: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Oxcorel Soil

Position on landscape: Upper summits of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 34 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
34 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 34 inches—very slow; below this depth—moderately rapid
Available water capacity: 5.0 to 6.9 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Beoska Soil

Position on landscape: Lower summits of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 9 inches—silt loam; 15 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
9 to 18 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
18 to 60 inches or more—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 18 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.5 to 9.4 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium strongly influenced by loess
Slope features: Length—short; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—gravelly loam; 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, GM; estimated AASHTO classification—A-4

12 to 24 inches—very gravelly loam, very gravelly fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline to moderately saline (2 to 8 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-1

24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GP-GM, GW-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.0 to 5.4 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave side slopes of fan piedmont remnants
Contrasting features: Slopes of 15 to 30 percent
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Inclusion 2
Position on landscape: Adjacent convex fan skirts
Contrasting features: Strongly saline-sodic surface layer
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 3
Position on landscape: Areas adjacent to channels
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, too clayey, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Beoska Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Poor—small stones, seepage
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated; Beoska soil—IVe, irrigated, and VIIs, nonirrigated; Whirlo soil—IVe, irrigated, and VIIs, nonirrigated
Range site: Oxcorel soil—024X002N; Beoska soil—024X002N; Whirlo soil—024X002N

2061—Oxcorel-Whirlo-Dun Glen association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 4,600 to 5,300 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Oxcorel silt loam, 2 to 4 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—40 percent
• Whirlo gravelly loam, 2 to 4 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—30 percent
• Dun Glen gravelly loam, 2 to 4 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Typic Torriorthents, 2 to 4 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—10 percent

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium with a thin loess mantle
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 8 inches—silt loam; 0 to 5 percent cobbles and stones and 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 34 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
34 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 34 inches—very slow; below this depth—moderately rapid
Available water capacity: 5.0 to 6.9 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Fan aprons and inset fan remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 12 inches—gravelly loam; 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, GM; estimated AASHTO classification—A-4
12 to 24 inches—very gravelly loam, very gravelly fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified

classification—GM; estimated AASHTO classification—A-2, A-1
24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.4 to 5.8 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Dun Glen Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush
Surface cover: 25 percent pebbles

Typical Profile

0 to 4 inches—gravelly loam; 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-4, A-2
4 to 60 inches or more—fine sandy loam, very fine sandy loam; 0 to 15 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 6.7 to 7.9 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Inset fans
Contrasting features: Subject to flash floods
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Dun Glen soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Poor—small stones, seepage
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim

Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Dun Glen Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated; Whirlo soil—IIe, irrigated, and VIIc, nonirrigated; Dun Glen soil—IIe, irrigated, and VIIc, nonirrigated
Range site: Oxcorel soil—024X002N; Whirlo soil—024X002N; Dun Glen soil—024X002N

2062—Oxcorel-Orovada association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Oxcorel gravelly loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—60 percent
• Orovada gravelly very fine sandy loam, 2 to 8 percent slopes, rarely flooded—Durixerollic Camborthids, coarse-loamy, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Natrargids, 2 to 8 percent slopes—Durixerollic Natrargids, fine, montmorillonitic, mesic—8 percent
• Inclusion 2: Dun Glen very fine sandy loam, 2 to 4 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—7 percent

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—smooth to slightly concave
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 5 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4
5 to 36 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
36 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 36 inches—very slow; below this depth—moderately rapid
Available water capacity: 5.4 to 7.3 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Orovada Soil

Position on landscape: Inset fans and fan drainageways
Parent material: Loess influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Indian ricegrass, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—gravelly very fine sandy loam; 25 to 45 percent pebbles (by weight); prismatic structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR

less than 2); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2, A-4

8 to 20 inches—loam, fine sandy loam, very fine sandy loam; 5 to 25 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper margins of fan piedmont remnants
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Inclusion 2
Position on landscape: Adjacent smooth fan skirts
Contrasting features: Lacks layer of weak silica accumulation
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action, flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated
Range site: Oxcorel soil—024X002N; Orovada soil—024X020N

2064—Oxcorel-Misad association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Oxcorel gravelly very fine sandy loam, 2 to 4 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—60 percent
• Misad gravelly fine sandy loam, 4 to 8 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 2 to 4 percent

slopes—Xerollic Camborthids, sandy-skeletal, mixed, mesic—10 percent
• Inclusion 2: Durixerollic Camborthids, 2 to 4 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—smooth
Dominant present vegetation: Bud sagebrush, shadscale, Indian ricegrass

Typical Profile

0 to 5 inches—gravelly fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM-GM; estimated AASHTO classification—A-4
5 to 20 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
20 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard and soft, firm and very firm; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 20 inches—very slow; below this depth—moderately rapid
Available water capacity: 4.8 to 6.7 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Misad Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—concave
Dominant present vegetation: Bud sagebrush, shadscale, Indian ricegrass

Typical Profile

0 to 7 inches—gravelly fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM, SM-SC; estimated AASHTO classification—A-1, A-2
7 to 31 inches—stratified fine sandy loam to very gravelly sandy loam; 5 to 10 percent cobbles and stones and 40 to 60 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—GM, GM-GC, SM, SM-SC; estimated AASHTO classification—A-1, A-2
31 to 60 inches or more—stratified very gravelly loamy sand to extremely gravelly coarse sandy loam; 5 to 10 percent cobbles and stones and 60 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 2.9 to 4.1 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Areas adjacent to channels
Contrasting features: Receives additional moisture from runoff and flooding

Distinctive present vegetation: Spiny hopsage

Inclusion 2

Position on landscape: Fan drainageways
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Misad soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Misad Soil for Selected Uses
Range seeding: Poor—too arid, small stones, excess salt
Daily cover for landfill: Poor—seepage, small stones, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated; Misad soil—IIIe, irrigated, and VIIs, nonirrigated
Range site: Oxcorel soil—024X002N; Misad soil—024X002N

2065—Oxcorel-Oxcorel, moderately steep-Pineval association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,000 to 5,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Oxcorel gravelly loam, 4 to 15 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—55 percent
• Oxcorel gravelly loam, 15 to 30 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—15 percent
• Pineval gravelly loam, 8 to 15 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids, 4 to 15 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—9 percent
• Inclusion 2: Whirlo gravelly very fine sandy loam, 4 to 15 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—6 percent

Characteristics of the Oxcorel Soil

Position on landscape: Summits and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4
5 to 36 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
36 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight);

massive; soft, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 36 inches—very slow; below this depth—moderately rapid
Available water capacity: 5.3 to 7.6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Oxcorel, Moderately Steep, Soil

Position on landscape: South-facing side slopes of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush

Typical Profile

0 to 3 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4

3 to 30 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

30 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 30 inches— very slow; below this depth—moderately rapid
Available water capacity: 5.1 to 7.0 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Pineval Soil

Position on landscape: North-facing side slopes of fan piedmont remnants
Parent material: Gravelly mixed alluvium
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, small rabbitbrush

Typical Profile

0 to 5 inches—gravelly loam; 25 to 40 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, GM-GC; estimated AASHTO classification—A-4

5 to 11 inches—very gravelly loam, very gravelly clay loam; 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

11 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly sand; 0 to 25 percent cobbles and stones and 50 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.0 to 4.2 inches

Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave upper inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail
Inclusion 2
Position on landscape: Concave lower inset fans
Contrasting features: Lacks layer of clay accumulation
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Oxcorel, moderately steep, soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Pineval soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Oxcorel, Moderately Steep, Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Fair—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Pineval Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, slope
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—area reclaim, small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated; Oxcorel, moderately steep, soil—VIIe, nonirrigated; Pineval soil—IVe, irrigated, and VIs, nonirrigated
Range site: Oxcorel soil—024X002N; Oxcorel, moderately steep, soil—024X002N; Pineval soil—024X005N

2066—Oxcorel-Broyles-Dun Glen association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 4,700 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Oxcorel very fine sandy loam, 2 to 4 percent slopes—

Duric Natrargids, fine, montmorillonitic, mesic—35 percent
• Broyles very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—30 percent
• Dun Glen very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Duric Camborthids, 0 to 4 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—8 percent
• Inclusion 2: Xeric Torriorthents, 0 to 2 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Whirlo cobbly very fine sandy loam, 4 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—2 percent

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 9 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
9 to 36 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
36 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 36 inches—very slow; below this depth—moderately rapid
Available water capacity: 5.4 to 7.3 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Broyles Soil

Position on landscape: Fan skirts
Parent material: Loess over mixed alluvium
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 11 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
11 to 60 inches or more—stratified loam to gravelly loamy sand; 5 to 40 percent pebbles (by weight); massive; hard, friable; very strongly alkaline (pH 9.2); slightly saline to moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 7.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Dun Glen Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium influenced by loess and volcanic ash

Slope features: Length—short; shape—smooth to slightly concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 4 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4
4 to 60 inches or more—fine sandy loam, very fine sandy loam; 0 to 15 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 6.7 to 7.9 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex lower margins of fan skirts
Contrasting features: Strongly saline-sodic surface layer
Distinctive present vegetation: Black greasewood, shadscale
Inclusion 2
Position on landscape: Areas adjacent to active channels
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Convex fan aprons
Contrasting features: Very gravelly substratum
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Potential uses: Rangeland; wildlife habitat; irrigated cropland, if irrigation water is made available

Wildlife habitat elements:
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Broyles soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Dun Glen soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, too clayey, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Broyles Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Dun Glen Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Oxcorel soil—VIIs, nonirrigated; Broyles soil—IIs, irrigated, and VIIc, nonirrigated; Dun Glen soil—IIc, irrigated, and VIIc, nonirrigated
Range site: Oxcorel soil—024X002N; Broyles soil—024X002N; Dun Glen soil—024X002N

2067—Oxcorel-Colbar-Stingdorn association

Map Unit Setting

Position on landscape: Hills and interhill fans
Elevation: 5,300 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Oxcorel very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—50 percent
• Colbar cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—20 percent
• Stingdorn cobbly loam, 15 to 30 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic, shallow—15 percent
Contrasting inclusions:
• Inclusion 1: Malpais very cobbly loam, 15 to 30 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—8 percent
• Inclusion 2: Orovada fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Durixerollic Camborthids, 2 to 4 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—2 percent

Characteristics of the Oxcorel Soil

Position on landscape: Interhill fan remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 34 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
34 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 34 inches—very slow; below this depth—moderately rapid
Available water capacity: 5.4 to 7.3 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Colbar Soil

Position on landscape: East- and north-facing side slopes of hills
Parent material: Kind—colluvium over residuum; source—rhyolitic rocks
Slope features: Length—short; shape—slightly concave to convex
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 3 inches—cobbly loam; 35 to 45 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic

(SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Stingdorn Soil

Position on landscape: West- and south-facing side slopes of hills
Parent material: Kind—residuum; source—rhyolitic rocks
Slope features: Length—short; shape—slightly concave to convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—cobbly loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
7 to 15 inches—very cobbly clay loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC; estimated AASHTO classification—A-6
15 to 20 inches—indurated duripan; massive
20 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 2.0 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: South-facing side slopes of adjacent fan skirt remnants
Contrasting features: Deep soils that have a very gravelly loam subsoil
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Slightly concave to smooth, lower inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Concave to smooth, narrow, upper inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Stingdorn soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium

Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, too clayey, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Colbar Soil for Selected Uses
Range seeding: Fair—droughty, large stones, too arid
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Moderate—large stones, piping

Ratings of the Stingdorn Soil for Selected Uses
Range seeding: Poor—too arid, droughty
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—depth to bedrock, cemented pan, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, large stones, cemented pan
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Oxcorel soil—VIIs, nonirrigated; Colbar soil—VIe, nonirrigated; Stingdorn soil—VIIe, nonirrigated
Range site: Oxcorel soil—024X002N; Colbar soil—024X005N; Stingdorn soil—024X002N

2068—Oxcorel-Golconda-Whirlo association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 4,700 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Oxcorel gravelly very fine sandy loam, 2 to 4 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—50 percent
• Golconda gravelly very fine sandy loam, 2 to 4 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—20 percent
• Whirlo very gravelly very fine sandy loam, 2 to 4 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Broyles silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—6 percent
• Inclusion 2: Xerollic Camborthids, 2 to 4 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Durixerollic Haplargids, 0 to 2 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—4 percent

Characteristics of the Oxcorel Soil

Position on landscape: Summits of lower fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Indian ricegrass

Typical Profile

0 to 5 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4
5 to 36 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
36 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH

8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 36 inches—very slow; below this depth—moderately rapid
Available water capacity: 4.4 to 7.1 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Golconda Soil

Position on landscape: Summits of upper fan piedmont remnants
Parent material: Loess influenced by volcanic ash over mixed alluvium
Slope features: Length—long; shape—smooth to convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 10 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4

10 to 23 inches—clay loam, gravelly clay loam, silty clay loam; 10 to 45 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, GC; estimated AASHTO classification—A-6, A-7

23 to 36 inches—strongly cemented duripan

36 to 60 inches or more—very gravelly loamy coarse sand, very gravelly sandy loam; 50 to 75 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 4.2 to 5.1 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 12 inches—very gravelly very fine sandy loam; 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.1); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, GM; estimated AASHTO classification—A-4

12 to 24 inches—very gravelly fine sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.7 to 5.9 inches
Water-supplying capacity: 7 inches

Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower part of inset fan remnants
Contrasting features: Coarse-loamy throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Concave, active inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage
Inclusion 3
Position on landscape: Inset fans remnants
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Golconda soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones, cemented pan, seepage
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Golconda Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—area reclaim, seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, seepage

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Poor—small stones, seepage
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated; Golconda soil—IVe, irrigated, and VIIs, nonirrigated; Whirlo soil—IIe, irrigated, and VIIc, nonirrigated
Range site: Oxcorel soil—024X002N; Golconda soil—024X002N; Whirlo soil—024X002N

2069—Oxcorel-Rednik-Veta association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Oxcorel gravelly silt loam, 4 to 8 percent slopes—

Duric Natrargids, fine, montmorillonitic, mesic—40 percent
• Rednik very gravelly sandy loam, 8 to 15 percent slopes—Typic Haplargids, loamy-skeletal, mixed, mesic—25 percent
• Veta very gravelly fine sandy loam, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 4 to 15 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 2: Xerollic Haplargids, 8 to 15 percent slopes—Xerollic Haplargids, clayey-skeletal, mixed, mesic—5 percent
• Inclusion 3: Typic Haplargids, 4 to 15 percent slopes—Typic Haplargids, fine-loamy, mixed, mesic—5 percent

Characteristics of the Oxcorel Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—gravelly silt loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4
5 to 20 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
20 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard and soft, firm and very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 20 inches—very slow; below this depth—moderately rapid
Available water capacity: 4.8 to 6.7 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Characteristics of the Rednik Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—very gravelly sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1
5 to 16 inches—very gravelly sandy loam, extremely gravelly loam, very gravelly sandy clay loam; 5 to 30 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; hard, friable; strongly alkaline (pH 8.9); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GC; estimated AASHTO classification—A-2
16 to 47 inches—very gravelly sandy loam; very gravelly fine sandy loam; 5 to 30 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GM; estimated AASHTO classification—A-1
47 to 60 inches or more—very gravelly sand, extremely gravelly loamy sand; 5 to 30 percent cobbles and stones and 40 to 75 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GP, GP-GM, SP-SM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 16 inches—moderately slow; below this depth—very rapid
Available water capacity: 2.0 to 3.5 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Veta Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass, bottlebrush squirreltail
Surface cover: 25 percent pebbles, 5 percent cobbles

Typical Profile

0 to 4 inches—very gravelly fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1

4 to 20 inches—very gravelly sandy loam, extremely gravelly loam; 10 to 30 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

20 to 60 inches or more—stratified extremely gravelly loamy sand to very gravelly loam; 10 to 25 percent cobbles and stones and 50 to 80 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately rapid
Available water capacity: 2.5 to 5.0 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan aprons
Contrasting features: Rapid permeability throughout the profile, receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Fan drainageways
Contrasting features: Receives additional moisture from runoff, very gravelly clay loam subsoil
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Upper margins of fan piedmont remnants
Contrasting features: Clay loam subsoil
Distinctive present vegetation: shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Rednik soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Veta soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage

Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings of the Rednik Soil for Selected Uses
Range seeding: Poor—too arid, small stones, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones, slope
Roadfill: Fair—large stones
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage

Ratings of the Veta Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, frost action
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Oxcorel soil—IVe, irrigated, and VIIs, nonirrigated; Rednik soil—VIIs, nonirrigated; Veta soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Oxcorel soil—024X002N; Rednik soil—024X002N; Veta soil—024X005N

2090—Punchbowl-Robson-Reluctan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,200 to 7,400 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Punchbowl cobbly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, frigid—50 percent
• Robson very cobbly loam, 15 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—20 percent
• Reluctan very cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey, montmorillonitic, frigid—6 percent
• Inclusion 2: Rock outcrop—6 percent
• Inclusion 3: Aridic Argixerolls, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—3 percent

Characteristics of the Punchbowl Soil

Position on landscape: South-facing summits, shoulders, and side slopes of mountains
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 3 inches—cobbly loam; 25 to 40 percent cobbles and stones and 15 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
3 to 7 inches—gravelly loam, loam; 0 to 5 percent cobbles and stones and 5 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC, CL, GC; estimated AASHTO classification—A-6
7 to 11 inches—gravelly clay loam, gravelly sandy clay loam; 0 to 5 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7
11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6

Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Robson Soil

Position on landscape: West-facing side slopes of mountains
Parent material: Kind—residuum; source—chert and shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, small rabbitbrush, black sagebrush

Typical Profile

0 to 10 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC, SM-SC, SC; estimated AASHTO classification—A-2
10 to 14 inches—very cobbly clay loam; 30 to 45 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-7
14 to 19 inches—very cobbly clay, extremely cobbly clay; 50 to 80 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 0.9 to 1.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Reluctan Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—rhyolitic rocks
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, Sandberg bluegrass, Idaho fescue, balsamroot

Typical Profile

0 to 8 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 40 to 55 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4, A-2
8 to 33 inches—gravelly clay loam, gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
33 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.5 to 7.4 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Crests of mountains
Contrasting features: Clay subsoil
Distinctive present vegetation: Black sagebrush, low sagebrush
Inclusion 2
Position on landscape: Scattered peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: North- and west-facing back slopes of mountains
Contrasting features: Bedrock at a depth of more than 40 inches
Distinctive present vegetation: Black sagebrush, Idaho fescue

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Punchbowl soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Robson soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Punchbowl Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Robson Soil for Selected Uses
Range seeding: Poor—droughty, large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—depth to bedrock, large stones, slope
Local roads and streets: Severe—depth to bedrock, large stones, slope
Roadfill: Poor—depth to bedrock, large stones, slope
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Reluctan Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Punchbowl soil—VIIs, nonirrigated; Robson soil—VIIs, nonirrigated; Reluctan soil—VIIs, nonirrigated
Range site: Punchbowl soil—024X030N; Robson soil—024X018N; Reluctan soil—024X021N

2091—Punchbowl-Teguro-Sumine association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Punchbowl very gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, frigid—35 percent
• Teguro very gravelly loam, 30 to 50 percent slopes—Lithic Argixerolls, loamy, mixed, frigid—25 percent
• Sumine very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Aridic Argixerolls, 50 to 75 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Cumulic Haploxerolls, 2 to 8 percent slopes—Cumulic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Rubble land—3 percent
• Inclusion 4: Rock outcrop—2 percent

Characteristics of the Punchbowl Soil

Position on landscape: South- and west-facing shoulders and side slopes of mountains
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, bluebunch wheatgrass, pine bluegrass, small rabbitbrush

Typical Profile

0 to 3 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

3 to 7 inches—gravelly loam, loam; 0 to 5 percent cobbles and stones and 5 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC, CL, GC; estimated AASHTO classification—A-6

7 to 11 inches—gravelly clay loam, gravelly sandy clay loam; 0 to 5 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7

11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Teguro Soil

Position on landscape: Crests and upper side slopes of mountains
Parent material: Kind—residuum; source—tuff
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Utah juniper, Idaho fescue, mountain big sagebrush, pine bluegrass, singleleaf pinyon
Surface cover: 55 percent pebbles

Typical Profile

0 to 4 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

4 to 16 inches—gravelly clay loam, gravelly loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-2, AS-6

16 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.0 to 2.6 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Sumine Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—breccia and quartzite
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Idaho fescue, bluegrass, arrowleaf balsamroot

Typical Profile

0 to 6 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 40 to 55 percent pebbles (by weight); granular structure; soft, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4

6 to 28 inches—very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC;

estimated AASHTO classification—A-2, A-6, A-7
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.8 to 4.1 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave, north-facing side slopes of mountains
Contrasting features: Slopes of 50 to 75 percent
Distinctive present vegetation: Idaho fescue, Utah juniper

Inclusion 2
Position on landscape: Concave drainageways, below springs, and along canyon bottoms of mountains
Contrasting features: Deep soils that have a thick, dark colored surface layer
Distinctive present vegetation: Basin wildrye, bluegrass, basin big sagebrush

Inclusion 3
Position on landscape: Scree slopes below rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Inclusion 4
Position on landscape: Rimrock and shoulder slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Teguro soil:
Site index for common trees: Singleleaf pinyon—45; Utah juniper—45
Most important native understory plants: Idaho fescue, mountain big sagebrush, serviceberry, oceanspray, bluegrass

Wildlife habitat elements:
Suitability of the Punchbowl soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Teguro soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—fair
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Punchbowl Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Teguro Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Punchbowl soil—VIIs,

nonirrigated; Teguro soil—VIIs, nonirrigated; Sumine soil—VIIs, nonirrigated
Range site: Punchbowl soil—024X030N; Teguro soil—025X062N; Sumine soil—024X029N
Woodland suitability group: Teguro soil—1R

2092—Punchbowl-Belate-Reluctan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,400 to 7,700 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 75 days

Composition

Major components:
• Punchbowl gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, frigid—50 percent
• Belate very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—20 percent
• Reluctan very gravelly loam, 15 to 30 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—6 percent
• Inclusion 2: Xerollic Haplargids, 15 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—4 percent
• Inclusion 3: Durixerollic Camborthids, 8 to 15 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 4: Rubble land—2 percent

Characteristics of the Punchbowl Soil

Position on landscape: Crests, shoulders, and upper side slopes of mountains
Parent material: Kind—residuum; source—andesite and rhyolite
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bluegrass, singleleaf pinyon, Utah juniper

Typical Profile

0 to 3 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4, A-2
3 to 6 inches—gravelly loam, loam; 0 to 5 percent cobbles and stones and 5 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC, CL, GC; estimated AASHTO classification—A-6
6 to 10 inches—gravelly clay loam, gravelly sandy clay loam; 0 to 5 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7
10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Belate Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium; source—ash flow tuffs and andesite
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, small rabbitbrush, bluegrass, Idaho fescue

Typical Profile

0 to 14 inches—very gravelly loam; 5 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
14 to 60 inches or more—very gravelly loam, very gravelly clay loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight);

angular blocky structure; hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 6.9 to 8.6 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Reluctan Soil

Position on landscape: Lower side slopes of mountains
Parent material: Kind—gravelly colluvium over residuum; source—rhyolitic rocks
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, pine bluegrass, Idaho fescue

Typical Profile

0 to 8 inches—very gravelly loam; 10 to 25 percent cobbles and stones and 45 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4, A-2
8 to 33 inches—gravelly clay loam, gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
33 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.4 to 4.6 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Scattered peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Convex lower side slopes of mountains
Contrasting features: Deep soils that have a thin surface layer
Distinctive present vegetation: Black sagebrush
Inclusion 3
Position on landscape: Foot slopes of mountains
Contrasting features: Deep soils that receive additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye
Inclusion 4
Position on landscape: Rock stringers on side slopes of mountains
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Punchbowl soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Belate soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Punchbowl Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope

Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Belate Soil for Selected Uses
Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Ratings of the Reluctan Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Punchbowl soil—VIIe, nonirrigated; Belate soil—VIIs, nonirrigated; Reluctan soil—VIIs, nonirrigated
Range site: Punchbowl soil—024X030N; Belate soil—024X027N; Reluctan soil—024X021N

2094—Punchbowl-Jung-Locane association

Map Unit Setting

Position on landscape: Hills
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Punchbowl very gravelly loam, 15 to 50 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, frigid—35 percent
• Jung very cobbly loam, 8 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—30 percent
• Locane very gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—6 percent
• Inclusion 2: Durixerollic Camborthids, 4 to 15 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Lithic Natrargids, 15 to 50 percent slopes—Lithic Natrargids, clayey-skeletal, montmorillonitic, mesic—4 percent

Characteristics of the Punchbowl Soil

Position on landscape: Lower north- and upper east- and west-facing side slopes of hills
Parent material: Kind—residuum; source—ash flow tuffs
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, bottlebrush squirreltail, bluegrass, small rabbitbrush, singleleaf pinyon

Typical Profile

0 to 3 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
3 to 7 inches—gravelly loam, loam; 0 to 5 percent cobbles and stones and 5 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC, CL, GC; estimated AASHTO classification—A-6
7 to 11 inches—gravelly clay loam, gravelly sandy clay loam; 0 to 5 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7
11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 9 inches

Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Jung Soil

Position on landscape: South- and lower east- and west-facing side slopes of hills
Parent material: Kind—residuum; source—ash flow tuffs
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, bottlebrush squirreltail, small rabbitbrush, ephedra

Typical Profile

0 to 8 inches—very cobbly loam; 35 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
8 to 19 inches—very cobbly clay loam, very gravelly clay loam, very cobbly clay; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; very hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Locane Soil

Position on landscape: Upper, north-facing side slopes of hills
Parent material: Kind—residuum; source—tuffaceous conglomerate
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, bluegrass

Typical Profile

0 to 6 inches—very gravelly loam; 5 to 15 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
6 to 14 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.4 to 1.9 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Scattered peaks of hills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Foot slopes of hills
Contrasting features: Very deep
Distinctive present vegetation: Wyoming big sagebrush, small rabbitbrush
Inclusion 3
Position on landscape: Slightly concave, south-facing side slopes of hills

Contrasting features: Sodium-affected layer of clay accumulation
Distinctive present vegetation: Shadscale, bud sagebrush, small rabbitbrush, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Punchbowl soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Jung soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Locane soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Punchbowl Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Jung Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Locane Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Punchbowl soil—VIIs, nonirrigated; Jung soil—VIIs, nonirrigated; Locane soil—VIIs, nonirrigated
Range site: Punchbowl soil—024X030N; Jung soil—028B016N; Locane soil—028B010N

2098—Punchbowl-Clanalpine-Sumine association

Map Unit Setting

Position on landscape: Mountains
Elevation: 7,000 to 7,600 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Punchbowl cobbly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, frigid—40 percent
• Clanalpine very cobbly loam, 30 to 50 percent slopes—Typic Argixerolls, loamy-skeletal, mixed, frigid—30 percent
• Sumine very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 15 to 30 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—7 percent
• Inclusion 2: Rock outcrop—4 percent
• Inclusion 3: Lithic Argixerolls, 15 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 4: Rubble land—1 percent

Characteristics of the Punchbowl Soil

Position on landscape: Lower, south- and west-facing crests and side slopes of mountains
Parent material: Kind—residuum; source—rhyolitic tuffs and andesite
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass, phlox, singleleaf pinyon

Typical Profile

0 to 3 inches—cobbly loam; 25 to 40 percent cobbles

and stones and 15 to 30 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

3 to 7 inches—gravelly loam, loam; 0 to 5 percent cobbles and stones and 5 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC, CL, GC; estimated AASHTO classification—A-6

7 to 11 inches—gravelly clay loam, gravelly sandy clay loam; 0 to 5 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7

11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Clanalpine Soil

Position on landscape: North- and west-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—rhyolitic and andesite
Slope features: Length—long; shape—convex
Dominant present vegetation: Singleleaf pinyon, mountainmahogany, bluegrass, Idaho fescue

Typical Profile

0 to 12 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH) 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4

12 to 38 inches—very cobbly clay loam, very cobbly loam, very gravelly clay loam; 15 to 35 percent cobbles and stones and 40 to 65 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6

38 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 4.2 to 4.8 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Sumine Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—very gravelly colluvium over residuum; source—breccia and quartzite
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, Thurber needlegrass, bluegrass, Idaho fescue

Typical Profile

0 to 6 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 40 to 55 percent pebbles (by weight); granular structure; soft, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4

6 to 28 inches—very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC;

estimated AASHTO classification—A-2, A-6, A-7
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.8 to 4.1 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, upper, south- and west-facing side slopes of mountains
Contrasting features: Bedrock at a depth of 40 to 60 inches; lacks a dark colored surface layer
Distinctive present vegetation: Black sagebrush, singleleaf pinyon

Inclusion 2
Position on landscape: Random small peaks and ridges of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Upper crests and shoulder slopes of mountains
Contrasting features: Bedrock at a depth of 10 to 20 inches; thick, dark colored surface layer
Distinctive present vegetation: Singleleaf pinyon, Utah juniper

Inclusion 4
Position on landscape: Rock stringers on side slopes of mountains
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Clanalpine soil:
Site index for common trees: Singleleaf pinyon—75; Utah juniper—75
Most important native understory plants: Mountain big sagebrush, Idaho fescue, bluegrass, lupine, phlox, arrowleaf balsamroot

Wildlife habitat elements:
Suitability of the Punchbowl soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Clanalpine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Punchbowl Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Clanalpine Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Punchbowl soil—VIIs, nonirrigated; Clanalpine soil—VIIs, nonirrigated; Sumine soil—VIIs, nonirrigated
Range site: Punchbowl soil—024X030N; Clanalpine soil—025X061N; Sumine soil—024X029N
Woodland suitability group: Clanalpine soil—2R

2099—Punchbowl-Roca-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,200 to 7,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Punchbowl very gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, frigid—45 percent
• Roca very cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—25 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xeric Torriorthents, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, frigid—6 percent
• Inclusion 2: Xerollic Durargids, 15 to 30 percent slopes—Xerollic Durargids, loamy, mixed, frigid, shallow—6 percent
• Inclusion 3: Typic Haploxerolls, 30 to 50 percent slopes—Typic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent
• Inclusion 4: Welch loam drained, 2 to 8 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed, frigid—1 percent

Characteristics of the Punchbowl Soil

Position on landscape: Crests, shoulders, and east- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass, bottlebrush squirreltail, small rabbitbrush, horsebrush

Typical Profile

0 to 3 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
3 to 7 inches—gravelly loam, loam; 0 to 5 percent cobbles and stones and 5 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC, CL, GC; estimated AASHTO classification—A-6
7 to 11 inches—gravelly clay loam, gravelly sandy clay loam; 0 to 5 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7
11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Roca Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—chert and shale
Slope features: Length—long; shape—convex to slightly concave
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, bluegrass, Thurber needlegrass

Typical Profile

0 to 5 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 15 to 25 percent pebbles

(by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6

5 to 27 inches—very gravelly clay loam, very gravelly clay; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2

27 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of Rock Outcrop

Position on landscape: Ridges, knobs, and steep side slopes of mountains
Slope features: Length—short; shape—convex
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex side slopes of mountains with exposures of interbedded limestone bedrock
Contrasting features: Calcareous throughout the profile
Distinctive present vegetation: Black sagebrush
Inclusion 2
Position on landscape: Foot slopes and lower side slopes of mountains
Contrasting features: Hardpan at a depth of 10 to 20 inches
Distinctive present vegetation: Mountain big sagebrush
Inclusion 3
Position on landscape: Concave, north-facing side slopes of mountains
Contrasting features: Thick, dark colored surface layer
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue
Inclusion 4
Position on landscape: Intermountain drainageways
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, western wheatgrass, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Punchbowl soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Punchbowl Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Roca Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Punchbowl soil—VIIIs, nonirrigated; Roca soil—VIIs, nonirrigated; Rock outcrop—VIIs
Range site: Punchbowl soil—024X030N; Roca soil—024X028N

2100—Grassval-Grina-Unsel Variant association

Map Unit Setting

Position on landscape: Fan piedmonts and low rolling hills
Elevation: 5,300 to 5,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Grassval gravelly loam, 4 to 8 percent slopes—Xerollic Durargids, loamy, mixed, mesic, shallow—35 percent
• Grina very gravelly loam, 15 to 50 percent slopes, eroded—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—30 percent
• Unsel Variant very gravelly loam, 30 to 50 percent slopes—Duric Haplargids, fine-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Duric Natrargids, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—5 percent
• Inclusion 2: Durorthidic Torriorthents, 2 to 8 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—4 percent
• Inclusion 3: Xerollic Haplargids, 15 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 4: Xeric Torriorthents, 30 to 50 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—3 percent

Characteristics of the Grassval Soil

Position on landscape: Summits and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bottlebrush squirreltail, shadscale

Typical Profile

0 to 4 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2, A-4
4 to 13 inches—gravelly clay loam, gravelly loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6
13 inches—indurated duripan; massive

Soil and Water Features

Depth to hardpan: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Grina Soil

Position on landscape: Side slopes of hills adjacent to fan piedmont remnants
Parent material: Kind—residuum; source—tuffaceous, weakly consolidated sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Utah juniper, Wyoming big sagebrush, bottlebrush squirreltail, black sagebrush, singleleaf pinyon

Typical Profile

0 to 3 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2
3 to 14 inches—loam, silty clay loam, silt loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
14 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.7 to 2.5 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Unsel Variant Soil

Position on landscape: Side slopes of hills adjacent to south-facing side slopes of fan piedmont remnants
Parent material: Kind—residuum and colluvium; source—tuffaceous, weakly consolidated sediments
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Shadscale, bud sagebrush, small rabbitbrush
Surface cover: 45 percent pebbles, 15 percent cobbles

Typical Profile

0 to 2 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
2 to 15 inches—gravelly loam; 30 to 45 percent pebbles (by weight); angular blocky structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SC; estimated AASHTO classification—A-6, A-7
15 to 22 inches—gravelly loam; 30 to 45 percent pebbles (by weight); massive; hard, firm; very strongly alkaline (pH 9.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, SC; estimated AASHTO classification—A-4, A-6
22 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.8 to 3.5 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower fan piedmont remnants
Contrasting features: Deep soils that have a clayey subsoil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage
Inclusion 3
Position on landscape: North-facing shoulders and upper side slopes of fan piedmont remnants
Contrasting features: Very gravelly subsoil
Distinctive present vegetation: Black sagebrush
Inclusion 4
Position on landscape: Eroded side slopes of fan piedmont remnants with a rock core
Contrasting features: Bedrock within a depth of 40 inches
Distinctive present vegetation: Wyoming big sagebrush, black sagebrush
Other inclusions (of minor extent): Rock outcrop occurs in random spots on side slopes of fan piedmont remnants

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Grina soil:
Site index for common trees: Singleleaf pinyon—18; Utah juniper—18
Most important native understory plants: Big sagebrush, bluebunch wheatgrass, basin wildrye, Thurber needlegrass, Indian ricegrass, bluegrass, tapertip hawksbeard

Wildlife habitat elements:
Suitability of the Grassval soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Grina soil for named elements: Wild herbaceous plants (nonirrigated)—poor; coniferous

plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Unsel Variant soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Grassval Soil for Selected Uses
Range seeding: Poor—droughty, cemented pan
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Grina Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope
Roadfill: Poor—depth to bedrock, slope, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Unsel Variant Soil for Selected Uses
Range seeding: Poor—too arid, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Severe—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Grassval soil—VIIs, nonirrigated; Grina soil—VIIs, nonirrigated; Unsel Variant soil—VIIs, nonirrigated
Range site: Grassval soil—024X030N; Grina soil—025X059N; Unsel Variant soil—024X002N
Woodland suitability group: Grina soil—1R

2104—Grassval-Zineb-Izod association

Map Unit Setting

Position on landscape: Piedmont slopes
Elevation: 5,800 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Grassval very gravelly sandy loam, 4 to 15 percent slopes—Xerollic Durargids, loamy, mixed, mesic, shallow—55 percent
• Zineb gravelly very fine sandy loam, 4 to 15 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—15 percent
• Izod cobbly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Xeric Torriorthents, warm, 15 to 50 percent slopes—Durorthidic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—7 percent
• Inclusion 2: Durorthidic Xeric Torriorthents, cool, 15 to 50 percent slopes—Durorthidic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 3: Xeric Torriorthents, 4 to 15 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—3 percent

Characteristics of the Grassval Soil

Position on landscape: Summits of fan piedmont remnants overplacing rock pediments
Parent material: Mixed alluvium
Slope features: Length—short; shape—smooth to convex
Dominant present vegetation: Black sagebrush, bottlebrush squirreltail, ephedra, Utah juniper, singleleaf pinyon

Typical Profile

0 to 4 inches—very gravelly sandy loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
4 to 13 inches—gravelly clay loam, gravelly loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6
13 inches—indurated duripan; massive

Soil and Water Features

Depth to hardpan: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 1.8 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Zineb Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, bottlebrush squirreltail, pine bluegrass

Typical Profile

0 to 6 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
6 to 13 inches—gravelly very fine sandy loam, gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
13 to 19 inches—very gravelly sandy loam, very gravelly loam; 0 to 10 percent cobbles and stones and 55 to 75 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1
19 to 27 inches—extremely cobbly sandy loam; 50 to 75 percent cobbles and stones or 55 to 85 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1
27 to 60 inches or more—extremely cobbly loamy coarse sand, extremely cobbly coarse sand; 50 to 75 percent cobbles and stones or 55 to 85 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GP, GM-GC; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.3 to 4.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—4
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Izod Soil

Position on landscape: Side slopes of rock pediment remnants
Parent material: Kind—residuum; source—interbedded shale and limestone
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 4 inches—cobbly loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SM, CL-ML, ML; estimated AASHTO classification—A-4
4 to 10 inches—very gravelly loam, extremely gravelly loam; 0 to 25 percent cobbles and stones and 50 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GM; estimated AASHTO classification—A-2
10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 7 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.4 to 0.5 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Colluvial side slopes of rock pediment remnants
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Black sagebrush, small rabbitbrush
Inclusion 2
Position on landscape: Higher elevation summits and north-facing side slopes of rock pediment remnants
Contrasting features: Higher water-supplying capacity
Distinctive present vegetation: Singleleaf pinyon, Utah juniper
Inclusion 3
Position on landscape: Areas adjacent to concave channels of inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Grassval soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Zineb soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Izod soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Grassval Soil for Selected Uses
Range seeding: Poor—droughty, cemented pan, small stones
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Zineb Soil for Selected Uses
Range seeding: Fair—droughty
Daily cover for landfill: Poor—small stones, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, large stones, slope
Roadfill: Fair—large stones
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Izod Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Grassval soil—VIIs, nonirrigated; Zineb soil—IVe, irrigated, and VIIs, nonirrigated; Izod soil—VIIs, nonirrigated
Range site: Grassval soil—024X030N; Zineb soil—024X005N; Izod soil—024X030N

2521—Stingdorn very cobbly loam, 4 to 30 percent slopes

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,200 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Stingdorn very cobbly loam, 4 to 30 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic, shallow—85 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Durargids, 4 to 15 percent slopes—Xerollic Durargids, loamy-skeletal, mixed, mesic, shallow—8 percent
• Inclusion 2: Chiara cobbly loam, 2 to 8 percent—Xerollic Durorthids, loamy, mixed, mesic, shallow—5 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Stingdorn Soil

Position on landscape: Crests, shoulders, and side slopes of foothills
Parent material: Kind—residuum; source—ash flow tuffs
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, small rabbitbrush, littleleaf horsebrush, bottlebrush squirreltail
Surface cover: 5 percent pebbles, 40 percent cobbles

Typical Profile

0 to 7 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2, A-4
7 to 15 inches—very cobbly clay loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-6
15 to 20 inches—indurated duripan; massive
20 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 1.9 inches
Water-supplying capacity: 6 inches
Runoff: Medium or rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave, north-facing side slopes of foothills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, pine bluegrass, small rabbitbrush
Inclusion 2
Position on landscape: Interhill fans adjacent to foothills
Contrasting features: Higher water-supplying capacity
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail
Inclusion 3
Position on landscape: Random small peaks and ridges of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Soil for Selected Uses

Range seeding: Poor—too arid, droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—depth to bedrock, cemented pan, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, large stones, cemented pan
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: 024X002N

2522—Stingdorn-Stingdorn, steep-Colbar association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Stingdorn cobbly loam, 15 to 30 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic, shallow—40 percent
• Stingdorn extremely cobbly loam, 30 to 50 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic, shallow—30 percent
• Colbar very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: McVegas very cobbly loam, 15 to 30 percent slopes—Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow—5 percent
• Inclusion 2: Durixerollic Camborthids, 8 to 15 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Rock outcrop—1 percent

Characteristics of the Stingdorn Soil

Position on landscape: Crests and upper side slopes of foothills
Parent material: Kind—residuum; source—rhyolitic ash-flow tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, small rabbitbrush

Typical Profile

0 to 7 inches—cobbly loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
7 to 15 inches—very cobbly clay loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC; estimated AASHTO classification—A-6
15 to 20 inches—indurated duripan; massive
20 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 1.9 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Stingdorn, Steep, Soil

Position on landscape: South-facing side slopes of foothills
Parent material: Kind—residuum; source—rhyolitic ash-flow tuff
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, shadscale, spiny hopsage, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—extremely cobbly loam; 50 to 60 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-2, A-1
7 to 15 inches—very cobbly clay loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-6
15 to 20 inches—indurated duripan; massive
20 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow

Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of foothills
Parent material: Kind—colluvium over residuum; source—ash flow tuffs
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, spiny hopsage, pine bluegrass, bottlebrush squirreltail

Typical Profile

0 to 3 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave foot slopes of foothills
Contrasting features: Sodium-affected layer of clay accumulation
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Adjacent concave alluvial fans
Contrasting features: Very deep soil
Distinctive present vegetation: Wyoming big sagebrush, Indian ricegrass
Inclusion 3
Position on landscape: Crests and eroded side slopes of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Stingdorn soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Stingdorn, steep, soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Stingdorn Soil for Selected Uses
Range seeding: Poor—too arid, droughty
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—depth to bedrock, cemented pan, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, large stones, cemented pan

Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Stingdorn, Steep, Soil for Selected Uses

Range seeding: Poor—too arid, droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—depth to bedrock, cemented pan, large stones
Local roads and streets: Severe—depth to bedrock, slope, large stones
Roadfill: Poor—depth to bedrock, slope, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, cemented pan
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Colbar Soil for Selected Uses

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Stingdorn, soil—VIIe, nonirrigated; Stingdorn, steep, soil—VIIs, nonirrigated; Colbar soil—VIIs, nonirrigated
Range site: Stingdorn soil—024X002N; Stingdorn, steep, soil—024X002N; Colbar soil—024X005N

2530—Perwick-Puett-Tulase association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,200 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Perwick very gravelly loam, 15 to 50 percent slopes, eroded—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—40 percent
• Puett gravelly loam, 15 to 50 percent slopes, eroded—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—30 percent
• Tulase silt loam, 2 to 8 percent slopes—Durorthidic Xeric Torriorthents, coarse-silty, mixed (calcareous), mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Pineval gravelly loam, 4 to 15 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—10 percent
• Inclusion 2: Rock outcrop—5 percent

Characteristics of the Perwick Soil

Position on landscape: Mid and lower side slopes of foothills
Parent material: Kind—residuum; source—tuffaceous sedimentary rocks
Slope features: Length—short; shape—slightly convex to slightly concave
Dominant present vegetation: Utah juniper, Wyoming big sagebrush, black sagebrush, small rabbitbrush

Typical Profile

0 to 3 inches—very gravelly loam; 50 to 60 percent pebbles (by weight); granular structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2
3 to 16 inches—gravelly sandy loam, gravelly loam, gravelly silt loam; 25 to 50 percent pebbles (by weight); granular structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
16 to 26 inches—fine sandy loam, sandy loam, loam; 10 to 20 percent pebbles (by weight); massive; very hard, very firm; very strongly alkaline (pH 9.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-2, A-4
26 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.2 to 3.9 inches
Water-supplying capacity: 8 inches

Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Puett Soil

Position on landscape: Eroded, upper side slopes of foothills
Parent material: Kind—residuum; source—weathered tuff and semiconsolidated lake sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, Wyoming big sagebrush, Indian ricegrass, Utah juniper

Typical Profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4
3 to 10 inches—coarse sandy loam, gravelly sandy loam, loam; 10 to 50 percent pebbles (by weight); massive; soft, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML, GM; estimated AASHTO classification—A-1, A-2, A-4
10 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Tulase Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—concave
Dominant present vegetation: Wyoming big sagebrush, basin wildrye, Sandberg bluegrass

Typical Profile

0 to 6 inches—silt loam; platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
6 to 60 inches or more—silt loam, very fine sandy loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.8 to 12.2 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent fan piedmont remnants
Contrasting features: Very deep
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Crests and eroded side slopes of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Perwick soil:
Site index for common trees: Utah juniper—18
Most important native understory plants: Wyoming big sagebrush, bluebunch wheatgrass, basin wildrye, Thurber needlegrass, Indian ricegrass, bluegrass

Woodland on the Puett soil:
Site index for common trees: Utah juniper—18
Most important native understory plants: Wyoming big sagebrush, antelope bitterbrush, bottlebrush squirreltail, Indian ricegrass, bluegrass

Wildlife habitat elements:
Suitability of the Perwick soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—fair
Suitability of the Puett soil for named elements: Wild herbaceous plants (nonirrigated)—poor; coniferous plants (nonirrigated)—very poor; shrubs (nonirrigated)—poor
Suitability of the Tulase soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Perwick Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Puett Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—seepage, piping

Ratings of the Tulase Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups
Capability classification: Perwick soil—VIIs, nonirrigated; Puett soil—VIIe, nonirrigated; Tulase soil—IIIe, irrigated, and VIc, nonirrigated
Range site: Perwick soil—025X059N; Puett soil—025X059N; Tulase soil—024X005N
Woodland suitability group: Perwick soil—1R; Puett soil—1R

2540—Buffaran-Wieland association

Map Unit Setting
Position on landscape: Fan piedmonts
Elevation: 5,700 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition
Major components:
• Buffaran cobbly loam, 2 to 8 percent slopes—Xerollic Durargids, clayey, montmorillonitic, mesic, shallow—50 percent
• Wieland gravelly loam, 8 to 15 percent slopes—Durixerollic Haplargids, fine, montmorillonitic, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 4 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 2: Xerollic Haplargids, 2 to 8 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—4 percent

Characteristics of the Buffaran Soil
Position on landscape: Summits and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, bottlebrush squirreltail
Surface cover: 25 percent pebbles, 5 percent cobbles

Typical Profile

0 to 4 inches—cobbly loam; 15 to 30 percent cobbles and stones and 15 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC, CL; estimated AASHTO classification—A-6

4 to 15 inches—gravelly clay loam, gravelly clay, clay; 0 to 5 percent cobbles and stones and 15 to 30 percent pebbles (by weight); prismatic structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

15 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.2 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Wieland Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; concave to convex
Dominant present vegetation: Wyoming big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 8 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL, SC; estimated AASHTO classification—A-6

8 to 20 inches—gravelly clay, clay; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); prismatic structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CH, SC; estimated AASHTO classification—A-7

20 to 60 inches or more—loam, gravelly loam, gravelly sandy loam; 0 to 5 percent cobbles and stones and 10 to 45 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 5.7 to 9.2 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave to smooth inset fans
Contrasting features: Very deep soils, loamy and gravelly throughout the profile
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 2
Position on landscape: Foot slopes of fan piedmont remnants
Contrasting features: Very stony surface layer
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Buffaran soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Wieland soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Buffaran Soil for Selected Uses
Range seeding: Poor—droughty, rooting depth
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, low strength
Roadfill: Poor—low strength, cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones

Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Wieland Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Fair—small stones, slope
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer

Interpretive Groups

Capability classification: Buffaran soil—VIIs, nonirrigated; Wieland soil—VIs, nonirrigated
Range site: Buffaran soil—024X005N; Wieland soil—024X005N

2541—Buffaran-Zoesta association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 6,200 to 6,800 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Buffaran gravelly loam, 4 to 8 percent slopes, very stony—Xerollic Durargids, clayey, montmorillonitic, mesic, shallow—60 percent
• Zoesta cobbly loam, 8 to 15 percent slopes—Xerollic Palegargids, fine, montmorillonitic, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—7 percent
• Inclusion 2: Xerollic Camborthids, 4 to 15 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Xerollic Haplargids, 4 to 15 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—3 percent

Characteristics of the Buffaran Soil

Position on landscape: Summits and shoulder slopes of lower fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, downy rabbitbrush, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 4 inches—gravelly loam; 5 to 15 percent cobbles and stones and 20 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC, CL; estimated AASHTO classification—A-6
4 to 15 inches—gravelly clay loam, gravelly clay, clay; 0 to 5 percent cobbles and stones and 15 to 30 percent pebbles (by weight); prismatic structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
15 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.2 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Zoesta Soil

Position on landscape: Summits of higher fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, downy rabbitbrush

Typical Profile

0 to 7 inches—cobbly loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

7 to 23 inches—clay; 0 to 10 percent cobbles and stones and 5 to 15 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

23 to 31 inches—gravelly clay loam, gravelly clay; 30 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

31 to 60 inches—very gravelly clay loam, very gravelly loam; 55 to 70 percent pebbles (by weight); massive; very hard, very firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 7.9 to 9.1 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave side slopes of fan piedmont remnants
Contrasting features: Slopes of 30 to 50 percent
Distinctive present vegetation: Big sagebrush

Inclusion 2
Position on landscape: Narrow inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 3
Position on landscape: Shoulder slopes of upper fan piedmont remnants
Contrasting features: Very gravelly layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush, mountain big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Buffaran soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Zoesta soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Buffaran Soil for Selected Uses
Range seeding: Poor—droughty, rooting depth
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, low strength
Roadfill: Poor—low strength, cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Zoesta Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Fair—shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Interpretive Groups

Capability classification: Buffaran soil—VIIs, nonirrigated; Zoesta soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Buffaran soil—024X005N; Zoesta soil—024X018N

2550—Laped-Old Camp-Colbar association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,200 to 6,000 feet
Average annual precipitation: About 8 inches

Average annual air temperature: About 47 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Laped gravelly loam, 4 to 15 percent slopes—Typic Durargids, loamy, mixed, mesic, shallow—30 percent
• Old Camp gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—30 percent
• Colbar gravelly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 8 to 15 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—8 percent
• Inclusion 2: Rock outcrop—7 percent

Characteristics of the Laped Soil

Position on landscape: Crests and shoulder slopes of hills
Parent material: Kind—residuum and colluvium; source—rhyolitic rocks
Slope features: Length—short; shape—convex to smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Sandberg bluegrass

Typical Profile

0 to 6 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
6 to 18 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6, A-7
18 to 23 inches—indurated duripan; massive
23 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.3 to 2.7 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Old Camp Soil

Position on landscape: South-facing side slopes of hills
Parent material: Kind—residuum influenced by volcanic ash; source—rhyolitic tuff
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 2 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
2 to 14 inches—very stony clay loam, very cobbly clay loam, extremely stony sandy clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of hills
Parent material: Kind—residuum and colluvium; source—rhyolitic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, GM-GC, SM, GM; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Foot slopes of hills
Contrasting features: Bedrock at a depth of more than 40 inches
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Inclusion 2
Position on landscape: Rimrock on shoulder slopes of hills and scattered small peaks
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Laped soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Laped Soil for Selected Uses
Range seeding: Poor—too arid, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock, cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stone, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Colbar Soil for Selected Uses
Range seeding: Fair—droughty, large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope, large stones

Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, small stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Laped soil—VIIs, nonirrigated; Old Camp soil—VIIs, nonirrigated; Colbar soil—VIIe, nonirrigated
Range site: Laped soil—024X002N; Old Camp soil—027X007N; Colbar soil—027X007N

2551—Laped-Colbar-Osoll association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,00 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Laped gravelly loam, 8 to 15 percent slopes—Typic Durargids, loamy, mixed, mesic, shallow—35 percent
• Colbar cobbly loam, 8 to 15 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—30 percent
• Osoll gravelly loam, 2 to 8 percent slopes—Typic Durorthids, loamy-skeletal, mixed, mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Durorthids, 2 to 8 percent slopes—Xerollic Durorthids, loamy-skeletal, mixed, mesic—8 percent
• Inclusion 2: Durixerollic Camborthids, 2 to 8 percent slopes—Durixerollic Camborthids, fine-loamy, mixed, mesic—4 percent
• Inclusion 3: Beoska very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—3 percent

Characteristics of the Laped Soil

Position on landscape: Crests, shoulders, and south-facing side slopes of hills
Parent material: Kind—residuum; source—rhyolitic tuff and andesite
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail
Surface cover: 30 percent pebbles

Typical Profile

0 to 6 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
6 to 18 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6, A-7
18 to 23 inches—indurated duripan; massive
23 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 30 inches
Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.3 to 2.7 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of hills
Parent material: Kind—colluvium and residuum; source—rhyolitic and andesitic tuffs
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Typical Profile

0 to 3 inches—cobbly loam; 35 to 45 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH

7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Osoll Soil

Position on landscape: Lower side slopes of hills
Parent material: Kind—residuum and colluvium influenced by loess; source—andesite, dacite, and rhyolitic tuff
Slope features: Length—long; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Indian ricegrass
Surface cover: 30 percent pebbles

Typical Profile

0 to 5 inches—gravelly loam; 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, CL-ML; estimated AASHTO classification—A-4
5 to 12 inches—very gravelly loam, very gravelly fine sandy loam; 10 to 25 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
12 to 35 inches—indurated duripan; platy structure; extremely hard, extremely firm
35 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 14 inches
Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 0.9 to 1.3 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing foot slopes of hills
Contrasting features: Duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Concave inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Adjacent smooth fan piedmont remnants
Contrasting features: Layer of sodium-affected clay accumulation
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Laped soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Osoll soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Laped Soil for Selected Uses
Range seeding: Poor—droughty, too arid
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock, cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Colbar Soil for Selected Uses
Range seeding: Fair—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, large stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Moderate—slope, depth to bedrock, low strength
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Moderate—large stones, piping

Ratings of the Osoll Soil for Selected Uses
Range seeding: Poor—droughty, too arid
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock, cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Laped soil—VIIs, nonirrigated; Colbar soil—VIs, nonirrigated; Osoll soil—VIIs, nonirrigated
Range site: Laped soil—024X002N; Colbar soil—024X005N; Osoll soil—024X002N

2552—Laped-Old Camp-Puett association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Laped gravelly very fine sandy loam, 4 to 15 percent slopes—Typic Durargids, loamy, mixed, mesic, shallow—35 percent
• Old Camp very gravelly fine sandy loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—30 percent
• Puett fine sandy loam, 30 to 50 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Orovada fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—7 percent
• Inclusion 2: Rock outcrop—5 percent
• Inclusion 3: Typic Torriorthents, 8 to 30 percent slopes—Typic Torriorthents, loamy, mixed (calcareous), mesic, shallow—3 percent

Characteristics of the Laped Soil

Position on landscape: Crests and side slopes of hills
Parent material: Kind—residuum and colluvium; source—rhyolitic ash flow tuffs
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Indian ricegrass

Typical Profile

0 to 6 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4, A-2
6 to 18 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6, A-7
18 to 23 inches—indurated duripan; massive
23 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 20 to 30 inches

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.3 to 2.7 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Old Camp Soil

Position on landscape: North-facing side slopes of hills
Parent material: Kind—very gravelly residuum and colluvium; source—rhyolitic ash flow tuffs
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Indian ricegrass

Typical Profile

0 to 2 inches—very gravelly fine sandy loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
2 to 14 inches—very cobbly clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Puett Soil

Position on landscape: Eroded, south-facing side slopes of hills
Parent material: Kind—residuum; source—tuffaceous, weakly consolidated sediments
Slope features: Length—long; shape—concave
Dominant present vegetation: Black sagebrush, small rabbitbrush, bottlebrush squirreltail, Wyoming big sagebrush

Typical Profile

0 to 4 inches—fine sandy loam; 5 to 15 pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4
4 to 15 inches—coarse sandy loam, sandy loam, fine sandy loam; 5 to 25 percent pebbles (by weight); massive; soft, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-1, A-2, A-4
15 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1.8 to 2.2 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—3
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial fans adjacent to hills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Rimrock and eroded side slopes of hills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Convex, eroded areas on shoulders and side slopes of hills
Contrasting features: Soft bedrock at a depth of 10 to 20 inches
Distinctive present vegetation: Wyoming big sagebrush, small rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Laped soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Puett soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Laped Soil for Selected Uses
Range seeding: Poor—droughty, too arid
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock, cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Puett Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—seepage, piping

Interpretive Groups

Capability classification: Laped soil—VIIs, nonirrigated; Old Camp soil—VIIs, nonirrigated; Puett soil—VIIe, nonirrigated
Range site: Laped soil—024X002N; Old Camp soil—024X005N; Puett soil—025X025N

2553—Laped-Stingdorn-Colbar association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Laped cobbly loam, 4 to 15 percent slopes—Typic Durargids, loamy, mixed, mesic, shallow—45 percent
• Stingdorn cobbly loam, 15 to 30 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic, shallow—25 percent
• Colbar very cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Orovada fine sandy loam, 4 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Rock outcrop—3 percent
• Inclusion 3: Typic Durargids, 8 to 15 percent slopes—Typic Durargids, clayey-skeletal, mixed, mesic—2 percent

Characteristics of the Laped Soil

Position on landscape: Crests of foothills
Parent material: Kind—residuum and colluvium; source—andesite, dacite, and rhyolitic ash flow tuffs
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—cobbly loam; 15 to 25 percent cobbles and stones and 10 to 25 percent pebbles (by

weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4

6 to 18 inches—gravelly clay loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6, A-7

18 to 23 inches—indurated duripan; massive

23 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.3 to 2.7 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Stingdorn Soil

Position on landscape: South-facing side slopes of foothills
Parent material: Kind—residuum; source—tuff
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, spiny hopsage, small rabbitbrush

Typical Profile

0 to 7 inches—cobbly loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4

7 to 15 inches—very cobbly clay loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC; estimated AASHTO classification—A-6

15 to 20 inches—indurated duripan; massive

20 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 1.9 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of foothills
Parent material: Kind—colluvium and residuum; source—tuff
Slope features: Length—short; shape—slightly convex to concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Indian ricegrass, small rabbitbrush, Webber ricegrass

Typical Profile

0 to 3 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4

3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6

22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR

less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Scattered peaks of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Concave foot slopes of foothills
Contrasting features: Indurated duripan at a depth of 20 to 30 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Laped soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Stingdorn soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Laped Soil for Selected Uses
Range seeding: Poor—droughty, too arid
Daily cover for landfill: Poor—depth to bedrock
Shallow excavations: Severe—depth to bedrock, cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Stingdorn Soil for Selected Uses
Range seeding: Poor—droughty, too arid
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—depth to bedrock, cemented pan, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, large stones, slope
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Colbar Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Laped soil—VIIs, nonirrigated; Stingdorn soil—VIIs, nonirrigated; Colbar soil—VIIs, nonirrigated
Range site: Laped soil—024X002N; Stingdorn soil—024X002N; Colbar soil—024X005N

2555—Laped-Colbar association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,200 to 6,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Laped very cobbly loam, 15 to 30 percent slopes—Typic Durargids, loamy, mixed, mesic, shallow—55 percent
• Colbar very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Typic Haplargids, 2 to 8 percent slopes—Typic Haplargids, fine, montmorillonitic, mesic—8 percent
• Inclusion 2: Typic Durargids, 30 to 50 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Xeric Torriorthents, 30 to 50 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—2 percent

Characteristics of the Laped Soil

Position on landscape: Crests, shoulders, and south-facing side slopes of hills
Parent material: Kind—residuum and colluvium; source—rhyolitic tuffs
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, horsebrush, pine bluegrass, Indian ricegrass

Typical Profile

0 to 6 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 50 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
6 to 8 inches—gravelly clay loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6, A-7
18 to 23 inches—indurated duripan; massive
23 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.1 to 2.5 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of hills
Parent material: Kind—residuum and colluvium; source— rhyolitic tuff
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass

Typical Profile

0 to 3 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight

Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Interhill fans
Contrasting features: Deep soils that have a clayey subsoil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Convex, lower, south-facing side slopes of hills
Contrasting features: Indurated duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Shadscale, Wyoming big sagebrush
Inclusion 3
Position on landscape: Concave, eroded side slopes of hills
Contrasting features: Bedrock within a depth of 20 inches
Distinctive present vegetation: Wyoming big sagebrush, small rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Laped soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Laped Soil for Selected Uses
Range seeding: Poor—droughty, large stones, too arid
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock, cemented pan, slope
Local roads and streets: Severe—cemented pan, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, slope
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Colbar Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Laped soil—VIIs, nonirrigated; Colbar soil—VIIs, nonirrigated
Range site: Laped soil—024X002N; Colbar soil—024X005N

2561—Puett-Genaw-Orovada association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,600 to 5,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Puett very gravelly loam, 15 to 30 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—50 percent
• Genaw gravelly loam, 15 to 30 percent slopes—Xerollic Haplargids, loamy, mixed, mesic, shallow—20 percent
• Orovada fine sandy loam, 2 to 8 percent slopes, rarely flooded—Durixerollic Camborthids, coarse-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—8 percent
• Inclusion 2: Typic Camborthids, 4 to 30 percent slopes—Typic Camborthids, loamy, mixed, mesic, shallow—5 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Puett Soil

Position on landscape: Eroded side slopes of hills
Parent material: Kind—residuum; source—tuffaceous, weakly consolidated sediments
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Small rabbitbrush, bottlebrush squirreltail, shadscale, black sagebrush, spiny hopsage

Typical Profile

0 to 4 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-1

4 to 15 inches—coarse sandy loam, gravelly sandy loam, loam; 10 to 50 percent pebbles (by weight); massive; soft, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML, GM; estimated AASHTO classification—A-1, A-2, A-4

15 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1.6 to 2.0 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Genaw Soil

Position on landscape: Summits and stable side slopes of hills
Parent material: Kind—loess mantled residuum; source—tuffaceous, weakly consolidated sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, spiny hopsage

Typical Profile

0 to 6 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4

6 to 11 inches—gravelly loam, gravelly clay loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6

11 to 16 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

16 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Orovada Soil

Position on landscape: Inset fans
Parent material: Loess capped mixed alluvium
Slope features: Length—short; shape—smooth to concave
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, Sandberg bluegrass, littleleaf horsebrush

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4

8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight);

massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex side slopes of hills
Contrasting features: Hard bedrock at a depth of 10 to 20 inches
Distinctive present vegetation: Black sagebrush, small rabbitbrush

Inclusion 2
Position on landscape: Slightly concave parts of crests and side slopes of hills
Contrasting features: Soft bedrock at a depth of 14 to 20 inches, lacks layer of clay accumulation
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Eroded side slopes of hills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Puett soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Genaw soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Puett Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—seepage, piping

Ratings of the Genaw Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action, flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Puett soil—VIIs, nonirrigated; Genaw soil—VIIe, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated
Range site: Puett soil—025X025N; Genaw soil—028B010N; Orovada soil—028B010N

2571—Colbar, steep-Burrita-Colbar association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,500 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Colbar very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—40 percent
• Burrita very cobbly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—25 percent
• Colbar gravelly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Lithic Haplargids, 15 to 30 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Xerollic Camborthids, 4 to 15 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Rock outcrop—3 percent
• Inclusion 4: Lithic Xerollic Haplargids, 15 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—2 percent

Characteristics of the Colbar, Steep, Soil

Position on landscape: South-facing side slopes of hills
Parent material: Kind—residuum and colluvium; source—tuff
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, pine bluegrass

Typical Profile

0 to 3 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Burrita Soil

Position on landscape: Summits and shoulder slopes of hills
Parent material: Kind—residuum; source—metamorphic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, pine bluegrass

Typical Profile

0 to 3 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
3 to 18 inches—very cobbly clay, very stony clay loam, very gravelly clay loam; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7
18 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.1 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8

Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of hills
Parent material: Kind—colluvium over residuum; source—tuff
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, pine bluegrass

Typical Profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SM, GM-GC, GM; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.4 to 3.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, south-facing, lower side slopes of hills
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Concave inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, basin wildrye
Inclusion 3
Position on landscape: Scattered peaks of hills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 4
Position on landscape: Convex parts of summits of hills
Contrasting features: Bedrock at a depth of 10 to 20 inches, slopes of 15 to 30 percent
Distinctive present vegetation: Black sagebrush, pine bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Colbar steep soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Colbar, Steep, Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Burrita Soil for Selected Uses
Range seeding: Poor—droughty, large stones

Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Colbar Soil for Selected Uses

Range seeding: Fair—droughty, too arid
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, small stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Colbar, steep, soil—VIIs, nonirrigated; Burrita soil—VIIs, nonirrigated; Colbar soil—VIe, nonirrigated
Range site: Colbar, steep, soil—024X005N; Burrita soil—024X005N; Colbar soil—024X005N

2573—Colbar-Midraw association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Colbar cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—65 percent
• Midraw very cobbly loam, 15 to 30 percent slopes—Xerollic Durargids, clayey, montmorillonitic, mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Durargids, 4 to 15 percent slopes—Xerollic Durargids, fine, montmorillonitic, mesic—10 percent
• Inclusion 2: Xerollic Durorthids, 2 to 8 percent slopes—Xerollic Durorthids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of foothills
Parent material: Kind—colluvium over residuum; source—tuff
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail, pine bluegrass

Typical Profile

0 to 3 inches—cobbly loam; 35 to 45 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.4 to 3.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Midraw Soil

Position on landscape: Predominantly south-facing side slopes of hills
Parent material: Kind—colluvium over residuum influenced by loess and volcanic ash; source—rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, littleleaf horsebrush, bottlebrush squirreltail, pine bluegrass
Surface cover: 10 percent pebbles, 30 percent cobbles, 10 percent stones

Typical Profile

0 to 6 inches—very cobbly loam; 30 to 40 percent cobbles and stones and 30 to 60 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-2
6 to 16 inches—gravelly clay, gravelly clay loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); prismatic structure; hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-7
16 to 31 inches—indurated duripan
31 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 22 to 35 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.3 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, north-facing crests and shoulder slopes of foothills
Contrasting features: Duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Inclusion 2
Position on landscape: Inset fans
Contrasting features: Duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Wyoming big sagebrush, pine bluegrass

Inclusion 3
Position on landscape: Rimrock on side slopes of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Midraw soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Colbar Soil for Selected Uses
Range seeding: Fair—droughty, too arid
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Midraw Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—cemented pan, slope, depth to bedrock
Local roads and streets: Severe—cemented pan, slope, shrink-swell
Roadfill: Poor—depth to bedrock, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, slope
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Colbar soil—VIe, nonirrigated; Midraw soil—VIIs, nonirrigated
Range site: Colbar soil—024X005N; Midraw soil—024X028N

2575—Colbar-Perwick-Settlemeyer association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,400 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Colbar gravelly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—40 percent
• Perwick very gravelly loam, 30 to 50 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—30 percent
• Settlemeyer loam, drained, 2 to 4 percent slopes—Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Camborthids, 15 to 30 percent slopes—Lithic Xerollic Camborthids, loamy-skeletal, mixed, mesic—8 percent
• Inclusion 2: Xerollic Haplargids, 2 to 8 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—5 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—tuffs
Slope features: Length—long; shape—convex to slightly concave
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, small rabbitbrush, singleleaf pinyon, Utah juniper

Typical Profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SM, GM-GC, GM; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Perwick Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—interbedded tuffaceous sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, mountain big sagebrush, pine bluegrass, bluebunch wheatgrass, bottlebrush squirreltail
Surface cover: 20 percent pebbles, 15 percent cobbles

Typical Profile

0 to 6 inches—very gravelly loam; 50 to 60 percent pebbles (by weight); granular structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2
6 to 27 inches—gravelly sandy loam, gravelly loam, gravelly silt loam; 25 to 50 percent pebbles (by

weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4

27 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Settlemeyer Soil

Position on landscape: Inset fans along canyon bottoms of mountains
Parent material: Mixed alluvium
Slope features: Length—short; shape—concave
Dominant present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye

Typical Profile

0 to 16 inches—loam; platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL, CL-ML; estimated AASHTO classification—A-4, A-6

16 to 40 inches—silt loam, silty clay loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

40 to 60 inches or more—fine sandy loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: December through March—36 to 48 inches; rest of year—below 48 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 9.4 to 11.0 inches
Water-supplying capacity: 12 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, dissected toe slopes of mountains
Contrasting features: Bedrock at a depth of 10 to 20 inches
Distinctive present vegetation: Wyoming big sagebrush, pine bluegrass

Inclusion 2
Position on landscape: Alluvial fans
Contrasting features: Deep soils, layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush, pine bluegrass

Inclusion 3
Position on landscape: Escarpments and canyon walls of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Perwick soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Settlemeyer soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Colbar Soil for Selected Uses
Range seeding: Fair—droughty, too arid
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, small stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Perwick Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Settlemeyer Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—frost action, low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Moderate—wetness

Interpretive Groups

Capability classification: Colbar soil—VIe, nonirrigated; Perwick soil—VIIs, nonirrigated; Settlemeyer soil—IIw, irrigated, and VIw, nonirrigated
Range site: Colbar soil—024X005N; Perwick soil—025X035N; Settlemeyer soil—025X003N

2591—Osoll Variant-Oxcorel association

Map Unit Setting

Position on landscape: Hills and fan piedmonts
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Osoll Variant gravelly loam, 4 to 15 percent slopes—Typic Durorthids, loamy-skeletal, mixed, mesic—60 percent
• Oxcorel gravelly loam, 4 to 15 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Rubble land—5 percent
• Inclusion 2: Lithic Xerollic Haplargids, 15 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—5 percent
• Inclusion 3: Typic Camborthids, 4 to 8 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—3 percent
• Inclusion 4: Rock outcrop—2 percent

Characteristics of the Osoll Variant Soil

Position on landscape: Side slopes of hills
Parent material: Kind—colluvium; source—tuff
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Surface cover: 25 percent pebbles

Typical Profile

0 to 10 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2, A-4
10 to 26 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
26 to 60 inches or more—indurated duripan

Soil and Water Features

Depth to hardpan: 20 to 35 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.6 to 3.4 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Oxcorel Soil

Position on landscape: Piedmont remnants
Parent material: Mixed alluvium influenced by loess

Slope features: Length—short; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4

5 to 36 inches—clay, clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 30 to 40); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

36 to 60 inches or more—very gravelly sandy loam, very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 36 inches—very slow; below this depth—moderately rapid
Available water capacity: 5.4 to 8.3 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Rock stringers on side slopes of hills
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Inclusion 2
Position on landscape: Concave, north-facing foot slopes of hills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, Indian ricegrass

Inclusion 3
Position on landscape: Convex toe slopes of hills
Contrasting features: Deep soils, sandy loam and loam throughout the profile
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 4
Position on landscape: Scattered rimrock areas of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Osoll Variant soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Osoll Variant Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan, slope
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Oxcorel Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess sodium
Daily cover for landfill: Poor—small stones, excess sodium
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage, slope

Embankments, dikes, and levees: Severe—seepage, excess sodium

Interpretive Groups

Capability classification: Osoll Variant soil—VIIs, nonirrigated; Oxcorel soil—VIIs, nonirrigated
Range site: Osoll Variant soil—024X002N; Oxcorel soil—024X002N

2600—Grina-Caniwe-Handy association

Map Unit Setting

Position on landscape: Hills and interhill fans
Elevation: 6,000 to 6,500 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Grina gravelly loam, 15 to 30 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—45 percent
• Caniwe silt loam, 2 to 4 percent slopes—Aridic Duric Haploxerolls, fine-silty, mixed, mesic—20 percent
• Handy loam, 4 to 8 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Aridic Argixerolls, 8 to 30 percent slopes—Aridic Argixerolls, loamy, mixed, mesic, shallow—6 percent
• Inclusion 2: Typic Camborthids, 30 to 50 percent slopes, eroded—Typic Camborthids, loamy, mixed, mesic, shallow—6 percent
• Inclusion 3: Cumulic Haploxerolls, 0 to 4 percent slopes—Cumulic Haploxerolls, fine-loamy, mixed, mesic—3 percent

Characteristics of the Grina Soil

Position on landscape: Side slopes of rolling hills
Parent material: Kind—residuum; source—soft sedimentary rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper, mountain big sagebrush

Typical Profile

0 to 5 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SC; estimated AASHTO classification—A-4, A-6
5 to 14 inches—loam, silty clay loam, silt loam; 0 to 20 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
14 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.8 to 2.6 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Caniwe Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium and loess
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, arrowleaf balsamroot, pine bluegrass

Typical Profile

0 to 17 inches—silt loam; platy structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
17 to 60 inches or more—stratified silty clay loam to silt loam; subangular blocky structure; hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 11 inches
Runoff: Slow
Hydrologic group: B

Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Handy Soil

Position on landscape: Interhill fan remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, arrowleaf balsamroot, pine bluegrass

Typical Profile

0 to 4 inches—loam; 0 to 5 percent cobbles and stones and 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, CL, ML; estimated AASHTO classification—A-4, A-6

4 to 30 inches—gravelly clay, clay; 0 to 5 percent cobbles and stones and 0 to 40 percent pebbles (by weight); prismatic structure; extremely hard, very firm; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

30 to 60 inches or more—stratified gravelly loam to very gravelly loamy sand; 0 to 5 percent cobbles and stones and 40 to 70 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 30 inches—slow; below this depth—moderately rapid
Available water capacity: 5.9 to 7.6 inches
Water-supplying capacity: 11 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Crests and concave side slopes of hills
Contrasting features: Layer of clay accumulation
Distinctive present vegetation: Singleleaf pinyon, Utah juniper

Inclusion 2
Position on landscape: Steep, eroded side slopes of hills
Contrasting features: Slopes of 30 to 50 percent
Distinctive present vegetation: Utah juniper, Wyoming big sagebrush

Inclusion 3
Position on landscape: Concave areas adjacent to stream channels
Contrasting features: Very deep soils that receive additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye, rubber rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Grina soil:
Site index for common trees: Singleleaf pinyon—30; Utah juniper—30
Most important native understory plants: Indian ricegrass, Thurber needlegrass, bluebunch wheatgrass, bluegrass, big sagebrush, tapertip hawksbeard

Wildlife habitat elements:
Suitability of the Grina soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—fair
Suitability of the Caniwe soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Handy soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Grina Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Caniwe Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Fair—too clayey
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—too clayey
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Handy Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Grina soil—VIIe, nonirrigated; Caniwe soil—IIe, irrigated, and VIe, nonirrigated; Handy soil—VIIs, nonirrigated
Range site: Grina soil—025X059N; Caniwe soil—025X014N; Handy soil—025X014N
Woodland suitability group: Grina soil—1D

2602—Grina-Grina, eroded-Caniwe association

Map Unit Setting

Position on landscape: Hills and mountain valley fans
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Grina gravelly loam, 15 to 30 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—50 percent
• Grina very gravelly loam, 15 to 30 percent slopes, eroded—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—20 percent
• Caniwe silt loam, 2 to 4 percent slopes—Aridic Duric Haploxerolls, fine-silty, mixed, mesic—15 percent

Contrasting inclusions:
• Inclusion 1: Typic Camborthids, 30 to 50 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic, shallow—5 percent
• Inclusion 2: Typic Torriorthents, 15 to 30 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, shallow—5 percent
• Inclusion 3: Xerollic Haplargids, 4 to 8 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—5 percent

Characteristics of the Grina Soil

Position on landscape: Summits and north-, east-, and west-facing side slopes of rolling hills
Parent material: Kind—loamy residuum; source—tuffaceous, weakly consolidated sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper, big sagebrush, bluegrass
Surface cover: 40 percent pebbles

Typical Profile

0 to 5 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SC; estimated AASHTO classification—A-4, A-6
5 to 15 inches—loam, silty clay loam, silt loam; 0 to 20 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
15 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.8 to 2.6 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Grina, Eroded, Soil

Position on landscape: South-facing side slopes of hills
Parent material: Kind—loamy residuum; source—tuffaceous, weakly consolidated sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper, big sagebrush

Typical Profile

0 to 3 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2
3 to 14 inches—loam, silty clay loam, silt loam; 0 to 20 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
14 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.7 to 2.5 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Caniwe Soil

Position on landscape: Inset fans on interhill remnants
Parent material: Mixed alluvium and loess
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Mountain big sagebrush, bluegrass, rubber rabbitbrush

Typical Profile

0 to 17 inches—silt loam; platy structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
17 to 60 inches or more—stratified silty clay loam to silt loam; subangular blocky structure; hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 11 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Eroded side slopes of hills
Contrasting features: Slopes of 30 to 50 percent
Distinctive present vegetation: Utah juniper, mountain big sagebrush
Inclusion 2
Position on landscape: South-facing, lower side slopes of hills
Contrasting features: Soft bedrock at a depth of 4 to 10 inches
Distinctive present vegetation: Utah juniper, mountain big sagebrush
Inclusion 3
Position on landscape: Slightly convex interhill fan remnants
Contrasting features: Deep soils that have a layer of clay accumulation
Distinctive present vegetation: Mountain big sagebrush, Wyoming big sagebrush, pine bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Grina soil:
Site index for common trees: Singleleaf pinyon—30; Utah juniper—30
Most important native understory plants: Indian ricegrass, Thurber needlegrass, basin wildrye, bluebunch wheatgrass, big sagebrush, tapertip hawksbeard, bluegrass

Woodland on the Grina, eroded, soil:
Site index for common trees: Singleleaf pinyon—18; Utah juniper—18
Most important native understory plants: Indian ricegrass, Thurber needlegrass, basin wildrye, bluebunch wheatgrass, big sagebrush, tapertip hawksbeard, bluegrass

Wildlife habitat elements:
Suitability of the Grina soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—fair
Suitability of the Grina, eroded, soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—fair
Suitability of the Caniwe soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Grina Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Grina, Eroded, Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Caniwe Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Fair—too clayey
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—too clayey
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Grina soil—VIIe, nonirrigated; Grina, eroded, soil—VIIs, nonirrigated; Caniwe soil—IIe, irrigated, and VIc, nonirrigated
Range site: Grina soil—025X059N; Grina, eroded, soil—025X059N; Caniwe soil—025X014N
Woodland suitability group: Grina soil—1D; Grina, eroded, soil—1D

2620—Handy-Caniwe-Zoesta association

Map Unit Setting

Position on landscape: Mountain valley fans
Elevation: 6,000 to 6,400 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Handy loam, 4 to 8 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—45 percent
• Caniwe silt loam, 2 to 8 percent slopes—Aridic Duric Haploxerolls, fine-silty, mixed, mesic—25 percent
• Zoesta loam, 4 to 8 percent slopes—Xerollic Paleargids, fine, montmorillonitic, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Cumulic Haploxerolls, 2 to 4 percent slopes—Cumulic Haploxerolls, fine-loamy, mixed, frigid—8 percent
• Inclusion 2: Zoesta very gravelly fine sandy loam, 8 to 15 percent slopes—Xerollic Paleargids, fine, montmorillonitic, frigid—5 percent
• Inclusion 3: Xeric Torriorthents, 8 to 15 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid, shallow—2 percent

Characteristics of the Handy Soil

Position on landscape: Lower summits and side slopes of mountain valley fan remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Wyoming big sagebrush, mountain big sagebrush, bluebunch wheatgrass, bluegrass, singleleaf pinyon, Utah juniper
Surface cover: 20 percent pebbles

Typical Profile

0 to 9 inches—loam; 0 to 5 percent cobbles and stones and 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm);

nonsodic (SAR less than 2); estimated Unified classification—CL-ML, CL, ML; estimated AASHTO classification—A-4, A-6

9 to 38 inches—gravelly clay, clay; 0 to 5 percent cobbles and stones and 0 to 40 percent pebbles (by weight); prismatic structure; extremely hard, very firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

38 to 60 inches or more—stratified gravelly loam to very gravelly loamy sand; 0 to 10 percent cobbles and stones and 40 to 70 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 30 inches—slow; below this depth—moderately rapid
Available water capacity: 5.9 to 7.6 inches
Water-supplying capacity: 11 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Caniwe Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium and loess
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, rabbitbrush, bluebunch wheatgrass, bluegrass

Typical Profile

0 to 17 inches—silt loam; platy structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

17 to 60 inches or more—stratified silty clay loam to silt loam; subangular blocky structure; hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4, A-7, A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 11 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Zoesta Soil

Position on landscape: Summits of higher elevation, mountain valley fan remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Low sagebrush, downy rabbitbrush, bluegrass

Typical Profile

0 to 7 inches—loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

7 to 23 inches—clay, clay loam; 0 to 10 percent cobbles and stones and 5 to 15 percent pebbles (by weight); prismatic structure; very hard, very firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

23 to 31 inches—gravelly clay loam, gravelly clay; 30 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

31 to 60 inches—very gravelly clay loam, very gravelly loam; 55 to 70 percent pebbles (by weight); massive; very hard, very firm; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Very slow
Available water capacity: 7.9 to 9.1 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow inset fans adjacent to mountain front
Contrasting features: Thick, dark colored surface layer
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 2
Position on landscape: North-facing side slopes of mountain valley fan remnants
Contrasting features: Slopes of 8 to 15 percent
Distinctive present vegetation: Low sagebrush

Inclusion 3
Position on landscape: Eroded summits and side slopes of adjacent hills
Contrasting features: Soft bedrock within a depth of 14 inches
Distinctive present vegetation: Utah juniper, singleleaf pinyon

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Handy soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Caniwe soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Zoesta soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Handy Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Caniwe Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Fair—too clayey
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—too clayey
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Zoesta Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Fair—shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Slight

Interpretive Groups

Capability classification: Handy soil—VIIs, nonirrigated; Caniwe soil—IIe, irrigated, and VIc, nonirrigated; Zoesta soil—IVs, irrigated, and VIIs, nonirrigated
Range site: Handy soil—025X014N; Caniwe soil—025X014N; Zoesta soil—024X018N

2621—Handy, gravelly-Handy-Zoesta association

Map Unit Setting

Position on landscape: Ballenas
Elevation: 6,200 to 7,200 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Handy gravelly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—50 percent
• Handy loam, 8 to 15 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—20 percent

• Zoesta cobbly loam, 15 to 30 percent slopes—Xerollic Paleargids, fine, montmorillonitic, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Durargids, 30 to 50 percent slopes—Xerollic Durargids, loamy-skeletal, mixed, frigid, shallow—7 percent
• Inclusion 2: Aridic Argixerolls, 15 to 30 percent slopes—Aridic Argixerolls, fine, montmorillonitic, frigid—4 percent
• Inclusion 3: Cumulic Haploxerolls, 4 to 15 percent slopes—Cumulic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent
• Inclusion 4: Xerollic Durargids, 15 to 30 percent slopes—Xerollic Durargids, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Handy, Gravelly, Soil

Position on landscape: South-facing side slopes of ballenas
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluegrass, Utah juniper

Typical Profile

0 to 4 inches—gravelly loam; 0 to 10 percent cobbles and stones and 45 to 55 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-6, A-2
4 to 30 inches—gravelly clay, clay; 0 to 10 percent cobbles and stones and 0 to 40 percent pebbles (by weight); prismatic structure; extremely hard, very firm; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
30 to 60 inches or more—stratified gravelly loam to very gravelly loamy sand; 0 to 10 percent cobbles and stones and 40 to 70 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 30 inches—slow; below this depth—moderately rapid
Available water capacity: 5.9 to 7.6 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Handy Soil

Position on landscape: Crests and shoulder slopes of ballenas
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Mountain big sagebrush, pine bluegrass, Idaho fescue, Utah juniper

Typical Profile

0 to 4 inches—loam; 0 to 5 percent cobbles and stones and 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, CL, ML; estimated AASHTO classification—A-4, A-6
4 to 30 inches—gravelly clay, clay; 0 to 5 percent cobbles and stones and 0 to 40 percent pebbles (by weight); prismatic structure; extremely hard, very firm; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
30 to 60 inches or more—stratified gravelly loam to very gravelly loamy sand; 0 to 5 percent cobbles and stones and 40 to 70 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 30 inches—slow; below this depth—moderately rapid
Available water capacity: 5.9 to 7.6 inches
Water-supplying capacity: 11 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight

Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Zoesta Soil

Position on landscape: North-facing side slopes of ballenas
Parent material: Mixed alluvium
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Low sagebrush, bluegrass, Utah juniper

Typical Profile

0 to 7 inches—cobbly loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

7 to 23 inches—clay; 0 to 10 percent cobbles and stones and 5 to 15 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

23 to 31 inches—gravelly clay loam, gravelly clay; 30 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

31 to 60 inches—very gravelly clay loam, very gravelly loam; 55 to 70 percent pebbles (by weight); massive; very hard, very firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 7.9 to 9.1 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: North-facing, eroded side slopes of ballenas
Contrasting features: Duripan at a depth of 10 to 20 inches
Distinctive present vegetation: Utah juniper, singleleaf pinyon

Inclusion 2
Position on landscape: Lower, north-facing side slopes of ballenas
Contrasting features: Dark colored surface layer
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue

Inclusion 3
Position on landscape: Inset fans dissecting ballenas
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 4
Position on landscape: Lower, south-facing side slopes of ballenas
Contrasting features: Duripan within a depth of 20 inches
Distinctive present vegetation: Big sagebrush, Indian ricegrass, galleta

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Handy, gravelly, soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Handy soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Zoesta soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Handy, Gravelly, Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Fair—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage

Ratings of the Handy Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage

Ratings of the Zoesta Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Moderate—slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Fair—shrink-swell, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Interpretive Groups

Capability classification: Handy, gravelly, soil—VIIe, nonirrigated; Handy soil—VIIs, nonirrigated; Zoesta soil—VIIs, nonirrigated
Range site: Handy, gravelly, soil—025X014N; Handy soil—025X014N; Zoesta soil—024X018N

2631—Midraw-Minat-Pineval association

Map Unit Setting

Position on landscape: Mountains and mountain valley fans
Elevation: 5,600 to 6,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Midraw very gravelly loam, 30 to 50 percent slopes—Xerollic Durargids, clayey, montmorillonitic, mesic, shallow—40 percent
• Minat gravelly loam, 30 to 50 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—30 percent
• Pineval gravelly fine sandy loam, 8 to 15 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xeric Torriorthents, 15 to 30 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—10 percent
• Inclusion 2: Lithic Xerollic Haplargids, 8 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 3: Cumulic Haploxerolls, 8 to 15 percent slopes—Cumulic Haploxerolls, fine-loamy, mixed, mesic—2 percent

Characteristics of the Midraw Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Residuum and colluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, bluegrass

Typical Profile

0 to 2 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 75 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
2 to 19 inches—gravelly clay loam, gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); prismatic structure; hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-7
19 to 25 inches—indurated duripan
25 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 22 to 35 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.1 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High

Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Minat Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Colluvium influenced by volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, mountain big sagebrush, Douglas rabbitbrush, Thurber needlegrass, bluegrass

Typical Profile

0 to 9 inches—gravelly loam; 5 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-4, A-6
9 to 27 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
27 to 60 inches or more—very gravelly fine sandy loam, very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.0 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Pineval Soil

Position on landscape: Mountain valley fans
Parent material: Mixed alluvium
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, spiny hopsage, Thurber needlegrass

Typical Profile

0 to 5 inches--gravelly fine sandy loam; 25 to 40 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2
5 to 11 inches—very gravelly clay loam, very gravelly sandy clay loam; 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-2
11 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly sand; 0 to 25 percent cobbles and stones and 50 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.0 to 4.2 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, eroded crests and shoulders of mountains
Contrasting features: Very shallow
Distinctive present vegetation: Wyoming big sagebrush, desert needlegrass, galleta
Inclusion 2
Position on landscape: Convex crests of mountains

Contrasting features: Very gravelly texture throughout the profile
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Concave drainageways of mountains and mountain valley fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Midraw soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Minat soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Pineval soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Midraw Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—cemented pan, slope, depth to bedrock
Local roads and streets: Severe—cemented pan, slope, shrink-swell
Roadfill: Poor—depth to bedrock, shrink-swell, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, too clayey
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Minat Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Ratings of the Pineval Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, slope
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—area reclaim, small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Midraw soil—VIIs, nonirrigated; Minat soil—VIIe, nonirrigated; Pineval soil—IVe, irrigated, and VIs, nonirrigated
Range site: Midraw soil—024X028N; Minat soil—024X005N; Pineval soil—024X005N

2640—Rasille-Kelk association

Map Unit Setting

Position on landscape: Inset fans
Elevation: 5,000 to 5,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Rasille silt loam, gravelly substratum, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-silty, mixed, mesic—45 percent
• Kelk silt loam, 0 to 2 percent slopes, occasionally flooded—Durixerollic Camborthids, fine-silty, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Torriorthents, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—8 percent
• Inclusion 2: Duric Camborthids, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 3: Aeric Halaquepts, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—3 percent

Characteristics of the Rasille Soil

Position on landscape: Lower inset fans adjacent to the margins of fan skirts and alluvial flats
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—silt loam; platy structure; slightly hard,

very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

6 to 15 inches—very fine sandy loam, silt loam; prismatic structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4

15 to 41 inches—very fine sandy loam, silt loam; massive; soft, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

41 to 60 inches or more—stratified fine sandy loam to very gravelly coarse sand; 25 to 50 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13) estimated Unified classification—GM, SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 7.8 to 9.7 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Kelk Soil

Position on landscape: Adjacent to channeled and overwash parts of upper inset fans
Parent material: Silty mixed alluvium and loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye, black greasewood

Typical Profile

0 to 14 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

14 to 51 inches—silt loam; 0 to 5 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

51 to 60 inches or more—silt loam; 0 to 10 percent pebbles (by weight); massive; soft, friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Flooding: Frequency—occasional; duration—brief to long; months—February through June
Permeability: In the upper 42 inches—slow; below this depth—moderate
Available water capacity: 11.3 to 12.5 inches
Water-supplying capacity: 9 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Adjacent alluvial flat remnants
Contrasting features: Calcareous throughout the profile
Distinctive present vegetation: Shadscale, black greasewood

Inclusion 2
Position on landscape: Adjacent remnants of fan skirts
Contrasting features: Loamy throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Adjacent alluvial flats
Contrasting features: Seasonal water table within a depth of 40 inches
Distinctive present vegetation: Black greasewood, rubber rabbitbrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Rasille soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Suitability of the Kelk soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Rasille Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—area reclaim
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Kelk Soil for Selected Uses
Range seeding: Fair—too arid, excess salt
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—low strength, flooding
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Rasille soil—IIIc, irrigated, and VIc, nonirrigated; Kelk soil—IIw, irrigated, and VIw, nonirrigated
Range site: Rasille soil—028B010N; Kelk soil—024X006N

2652—Malpais-Stingdorn association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,400 to 6,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Malpais very gravelly fine sandy loam, 15 to 50 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—50 percent
• Stingdorn extremely cobbly loam, 4 to 15 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic, shallow—40 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Durargids, 30 to 50 percent slopes—Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic—5 percent
• Inclusion 2: Lithic Camborthids, 15 to 30 percent slopes—Lithic Camborthids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Malpais Soil

Position on landscape: Lower side slopes of hills
Parent material: Kind—colluvium influenced by loess and volcanic ash; source—rhyolite and andesite
Slope features: Length—long; shape—concave
Dominant present vegetation: Bud sagebrush, shadscale, Indian ricegrass

Typical Profile

0 to 3 inches—very gravelly fine sandy loam; 0 to 5 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1
3 to 15 inches—very gravelly loam, very cobbly fine sandy loam; 5 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
15 to 60 inches or more—extremely cobbly loam, extremely cobbly sandy loam, very cobbly loam; 40 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.6 to 5.4 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Stingdorn Soil

Position on landscape: Crests and upper side slopes of hills
Parent material: Kind—residuum; source—andesite and rhyolite
Slope features: Length—short; shape—convex
Dominant present vegetation: Bud sagebrush, shadscale, Indian ricegrass

Typical Profile

0 to 7 inches—extremely cobbly loam; 50 to 60 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-2, A-1
7 to 15 inches—very cobbly clay loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC; estimated AASHTO classification—A-6
15 to 20 inches—indurated duripan; massive
20 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 1.9 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: North-facing side slopes of hills
Contrasting features: Higher water-supplying capacity
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Back slopes of hills and on fire scar areas
Contrasting features: Bedrock within a depth of 20 inches
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Inclusion 3
Position on landscape: Random small peaks of hills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Malpais soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Stingdorn soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Malpais Soil for Selected Uses
Range seeding: Poor—too arid, small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Stingdorn Soil for Selected Uses
Range seeding: Poor—too arid, droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, large stones
Shallow excavations: Severe—depth to bedrock, cemented pan, large stones
Local roads and streets: Severe—depth to bedrock, large stones
Roadfill: Poor—depth to bedrock, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, cemented pan
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Malpais soil—VIIs, nonirrigated; Stingdorn soil—VIIs, nonirrigated
Range site: Malpais soil—024X002N; Stingdorn soil—024X002N

2670—Zoesta Variant-Jung-McVegas association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,800 to 7,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Zoesta Variant gravelly loam, 15 to 30 percent slopes—Xerollic Paleargids, fine, montmorillonitic, mesic—40 percent
• Jung very gravelly loam, 8 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—30 percent
• McVegas very cobbly loam, 15 to 30 percent slopes—Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow—15 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids, 8 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—9 percent
• Inclusion 2: Xerollic Haplargids, 8 to 15 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 3: Rock outcrop—3 percent

Characteristics of the Zoesta Variant Soil

Position on landscape: North-facing side slopes of hills
Parent material: Kind—residuum and colluvium; source—chert, quartzite, and extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, shadscale, bluegrass, downy rabbitbrush
Surface cover: 45 percent pebbles, 5 percent cobbles

Typical Profile

0 to 8 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GM, SM; estimated AASHTO classification—A-4
8 to 27 inches—clay; 5 to 15 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—CH; estimated AASHTO classification—A-7
27 to 36 inches—clay loam, clay; 5 to 15 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
36 to 60 inches—gravelly loam, gravelly sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 pebbles (by weight); massive; very hard, very firm; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2, A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 6.3 to 8.1 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Jung Soil

Position on landscape: South-facing crests and shoulder slopes of hills
Parent material: Kind—residuum; source—metavolcanic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
8 to 19 inches—very cobbly clay, very gravelly clay loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; very hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the McVegas Soil

Position on landscape: South-facing side slopes of hills
Parent material: Kind—residuum; source—metavolcanic rocks
Slope features: Length—long; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, small rabbitbrush

Typical Profile

0 to 5 inches—very cobbly loam; 35 to 45 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-4
5 to 19 inches—very cobbly clay, very cobbly clay loam, very cobbly silty clay; 30 to 40 percent cobbles and stones and 25 to 35 percent pebbles (by weight); prismatic structure; very hard, very firm; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, CH, GC; estimated AASHTO classification—A-7
19 to 22 inches—strongly cemented duripan
22 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 15 to 23 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.5 to 2.9 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Crests and convex side slopes of hills near rock outcrop
Contrasting features: Noncalcareous throughout the profile
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail
Inclusion 2
Position on landscape: Concave foot slopes of hills
Contrasting features: Deep soils that have a very gravelly loam layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Rimrock and small peaks of hills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Zoesta Variant soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Jung soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the McVegas soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Zoesta Variant Soil for Selected Uses
Range seeding: Poor—rooting depth, erodes easily
Daily cover for landfill: Poor—hard to pack
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too clayey, small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—hard to pack

Ratings of the Jung Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, hard to pack

Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the McVegas Soil for Selected Uses

Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack, large stones
Shallow excavations: Severe—depth to bedrock, slope, cemented pan
Local roads and streets: Severe—low strength, slope, depth to bedrock
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, large stones, slope
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones, thin layers, excess sodium

Interpretive Groups

Capability classification: Zoesta Variant soil—VIIe, nonirrigated; Jung soil—VIIs, nonirrigated; McVegas soil—VIIs, nonirrigated
Range site: Zoesta Variant soil—024X030N; Jung soil—024X030N; McVegas soil—024X002N

2681—Tessfive-Puett-Grina association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,300 to 5,700 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Tessfive gravelly loam, 8 to 30 percent slopes—Lithic Xeric Torriorthents, loamy, mixed (calcareous), mesic—45 percent
• Puett gravelly sandy loam, 15 to 50 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—25 percent
• Grina gravelly loam, 15 to 30 percent slopes, eroded—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—15 percent
Contrasting inclusions:
• Inclusion 1: Orovada gravelly very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—6 percent
• Inclusion 2: Unsel Variant very gravelly loam, 15 to 30 percent slopes—Duric Haplargids, fine-loamy, mixed, mesic—5 percent
• Inclusion 3: Xeric Torriorthents, 2 to 8 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—4 percent

Characteristics of the Tessfive Soil

Position on landscape: Crests and upper side slopes of hills
Parent material: Kind—residuum influenced by loess; source—tuffaceous sedimentary rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bottlebrush squirreltail, Sandberg bluegrass
Surface cover: 35 percent pebbles

Typical Profile

0 to 6 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); moderately saline (8 to 16 mmhos/cm); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4
6 to 16 inches—gravelly loam, gravelly sandy loam; 0 to 5 percent cobbles and stones and 30 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4
16 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—5

Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Puett Soil

Position on landscape: Eroded side slopes of hills
Parent material: Kind—residuum; source—weakly consolidated, tuffaceous sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, Utah juniper

Typical Profile

0 to 4 inches—gravelly sandy loam; 0 to 5 percent cobbles and stones and 30 to 40 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2
4 to 15 inches—coarse sandy loam, gravelly sandy loam, loam; 10 to 50 percent pebbles (by weight); massive; soft, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML, GM; estimated AASHTO classification—A-1, A-2, A-4
15 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1.7 to 2.1 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—4
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Grina Soil

Position on landscape: Lower side slopes of hills
Parent material: Kind—residuum; source—soft sedimentary rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Utah juniper, singleleaf pinyon, Wyoming big sagebrush

Typical Profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SC; estimated AASHTO classification—A-6, A-4
3 to 14 inches—loam, silty clay loam, silt loam; 0 to 20 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
14 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.8 to 2.6 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, Douglas rabbitbrush
Inclusion 2
Position on landscape: Interhill fan remnants
Contrasting features: Soft bedrock at a depth of 20 to 40 inches
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Inset fan remnants
Contrasting features: Very deep
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Grina soil:
Site index for common trees: Singleleaf pinyon—18; Utah juniper—18
Most important native understory plants: Indian ricegrass, Thurber needlegrass, basin wildrye, bluebunch wheatgrass, big sagebrush, tapertip hawksbeard, bluegrass

Wildlife habitat elements:
Suitability of the Tessfive soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Puett soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Grina soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—fair

Ratings of the Tessfive Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Puett Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—seepage, piping

Ratings of the Grina Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups
Capability classification: Tessfive soil—VIIs, nonirrigated; Puett soil—VIIe, nonirrigated; Grina soil—VIIe, nonirrigated
Range site: Tessfive soil—024X030N; Puett soil—025X025N; Grina soil—025X059N
Woodland suitability group: Grina soil—1D

2711—Burrita-Burnborough association

Map Unit Setting
Position on landscape: Mountains
Elevation: 5,800 to 6,800 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 100 days

Composition
Major components:
• Burrita very cobbly loam, south aspect, 50 to 75 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—45 percent
• Burnborough very gravelly loam, 50 to 75 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—40 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—4 percent
• Inclusion 2: Xeric Torriorthents, 4 to 15 percent slopes—Xeric Torriorthents, clayey-skeletal, montmorillonitic (calcareous), mesic—4 percent
• Inclusion 3: Burrita very cobbly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—4 percent
• Inclusion 4: Rock outcrop—3 percent

Characteristics of the Burrita Soil
Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—metamorphic rock
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, mountain big sagebrush, lanceleaf rabbitbrush, Thurber needlegrass, bluebunch wheatgrass

Typical Profile

0 to 3 inches—very cobbly loam; 25 to 40 percent

cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4

3 to 18 inches—very cobbly clay, very stony clay loam, very gravelly clay loam; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7

18 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.1 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Burnborough Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium; source—rhyolitic ash flow tuff
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail, pine bluegrass

Typical Profile

0 to 17 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 45 to 60 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SC; estimated AASHTO classification—A-2

17 to 60 inches or more—very gravelly loam, very gravelly clay loam; 15 to 25 percent cobbles and stones and 40 to 65 percent pebbles (by weight); prismatic structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.1 to 6.9 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower side slopes of mountains
Contrasting features: Very deep soils, clayey layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush, bluebunch wheatgrass

Inclusion 2
Position on landscape: Concave inset fans at base of mountains
Contrasting features: Very deep soils, very gravelly clay layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass

Inclusion 3
Position on landscape: Crests and shoulder slopes of mountains
Contrasting features: Slopes of 4 to 15 percent
Distinctive present vegetation: Wyoming big sagebrush, pine bluegrass

Inclusion 4
Position on landscape: Rimrock and eroded side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Suitability of the Burnborough soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Burrita Soil for Selected Uses

Range seeding: Poor—droughty, large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Burnborough Soil for Selected Uses

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Interpretive Groups

Capability classification: Burrita soil—VIIs, nonirrigated; Burnborough soil—VIIs, nonirrigated
Range site: Burrita soil—024X028N; Burnborough soil—024X021N

2712—Burrita-Alley-Newpass association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Burrita gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—35 percent
• Alley loam, 30 to 50 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—30 percent
• Newpass loam, 30 to 50 percent slopes—Haploxerollic Nadurargids, fine, montmorillonitic, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Rubble land—5 percent
• Inclusion 2: Alley loam, 15 to 30 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—4 percent
• Inclusion 3: Newpass loam, 15 to 30 percent slopes—Haploxerollic Nadurargids, fine, montmorillonitic, mesic—4 percent
• Inclusion 4: Rock outcrop—2 percent

Characteristics of the Burrita Soil

Position on landscape: Crests and shoulder slopes of foothills
Parent material: Kind—residuum; source—metamorphic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Douglas rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
3 to 18 inches—very cobbly clay, very stony clay loam, very gravelly clay loam; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-7
18 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.1 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Alley Soil

Position on landscape: East-, west-, and south-facing side slopes of foothills
Parent material: Kind—colluvium influenced by loess; source—volcanic rock
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, Douglas rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 3 inches—loam; 0 to 5 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 16 inches—gravelly clay loam, gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—SC, GC; estimated AASHTO classification—A-6
16 to 40 inches—gravelly sandy loam, gravelly loam; 0 to 10 percent cobbles and stones and 40 to 50 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM, GM-GC, SM-SC; estimated AASHTO classification—A-2
40 to 60 inches or more—very gravelly sandy loam, very gravelly loamy sand; 0 to 10 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 6.3 to 7.8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Newpass Soil

Position on landscape: North-facing side slopes of foothills
Parent material: Kind—residuum influenced by loess; source—metamorphic and volcanic rock
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Douglas rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—loam; 0 to 25 percent pebbles (by weight); platy structure; slightly hard; moderately alkaline (pH 8.2); nonsaline (less than 3 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, CL-ML, CL; estimated AASHTO classification—A-4, A-6
5 to 17 inches—clay, silty clay; 0 to 5 percent cobbles and stones and 5 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CH; estimated AASHTO classification—A-7
17 to 24 inches—very cobbly silty clay, gravelly clay, very gravelly clay; 15 to 60 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; hard, firm; strongly alkaline (pH 8.8); nonsaline to slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CH; estimated AASHTO classification—A-7
24 to 34 inches—strongly cemented duripan
34 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 20 to 29 inches
Depth to bedrock: 21 to 36 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.9 to 3.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—2; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Stone stripes and screes on south-facing side slopes of foothills
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: East-facing lower side slopes of foothills
Contrasting features: Slopes of 15 to 30 percent
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: North-facing crests and shoulders of foothills
Contrasting features: Slopes of 15 to 30 percent
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 4
Position on landscape: Rimrock on shoulder slopes of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Alley soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Newpass soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Burrita Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Alley Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope, cutbanks cave
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Newpass Soil for Selected Uses
Range seeding: Rooting depth, excess salt, erodes easily
Daily cover for landfill: Poor—depth to bedrock, hard to pack, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—depth to bedrock, low strength, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, too clayey, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Burrita soil—VIIe, nonirrigated; Alley soil—VIIe, nonirrigated; Newpass soil—VIIe, nonirrigated
Range site: Burrita soil—024X035N; Alley soil—024X005N; Newpass soil—024X005N

2721—Burnborough-Sumine-Burrita association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,800 to 7,000 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Burnborough very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—40 percent
• Sumine very cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—25 percent
• Burrita very cobbly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—20 percent

Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 50 to 75 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—7 percent
• Inclusion 2: Rock outcrop—3 percent
• Inclusion 3: Aridic Argixerolls, 30 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—3 percent
• Inclusion 4: Rubble land—2 percent

Characteristics of the Burnborough Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium; source—mixed tuffs
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Mountain big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, singleleaf pinyon, Utah juniper
Surface cover: 35 percent pebbles, 5 percent cobbles

Typical Profile

0 to 16 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 45 to 60 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SC; estimated AASHTO classification—A-2
16 to 60 inches or more—very gravelly loam, very gravelly clay loam; 15 to 25 percent cobbles and stones and 40 to 65 percent pebbles (by weight); prismatic structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.1 to 6.9 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Sumine Soil

Position on landscape: Upper, south-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—quartzite
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, pine bluegrass, singleleaf pinyon, Utah juniper

Typical Profile

0 to 10 inches—very cobbly loam; 20 to 55 percent cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly clay loam, very cobbly clay loam, very gravelly loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 2.5 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Burrita Soil

Position on landscape: Lower side slopes of mountains
Parent material: Kind—residuum; source—metamorphic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Sandberg bluegrass

Typical Profile

0 to 3 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very

friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4

3 to 18 inches—very cobbly clay, very stony clay loam, very gravelly clay loam; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7

18 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.1 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Eroded, east-facing, upper side slopes of mountains
Contrasting features: Soft bedrock at a depth of 5 to 14 inches
Distinctive present vegetation: Wyoming big sagebrush, small rabbitbrush

Inclusion 2
Position on landscape: Random, small peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Convex side slopes of mountains near rock outcrop
Contrasting features: Bedrock at a depth of 20 to 40 inches, clayey layer of clay accumulation
Distinctive present vegetation: Singleleaf pinyon, mountain big sagebrush

Inclusion 4
Position on landscape: Rock stringers on side slopes of mountains
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Burnborough soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Burnborough Soil for Selected Uses
Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Burrita Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones, slope

Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Burnborough soil—VIIs, nonirrigated; Sumine soil—VIIs, nonirrigated; Burrita soil—VIIs, nonirrigated
Range site: Burnborough soil—024X021N; Sumine soil—024X029N; Burrita soil—024X005N

2760—Ginex-Burrita-Burrita, south aspect, association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,600 to 6,300 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Ginex very gravelly sandy loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic, shallow—30 percent
• Burrita very cobbly loam, 15 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—30 percent
• Burrita very cobbly loam, south aspect, 30 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—5 percent
• Inclusion 2: Xerollic Haplargids, 30 to 75 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—5 percent
• Inclusion 3: Fluvaquentic Haploxerolls, 4 to 15 percent slopes—Fluvaquentic Haploxerolls, fine-loamy, mixed, mesic—3 percent
• Inclusion 4: Duric Natrargids, 30 to 50 percent slopes—Duric Natrargids, clayey-skeletal, montmorillonitic, mesic—2 percent

Characteristics of the Ginex Soil

Position on landscape: Eroded shoulders and side slopes of hills
Parent material: Kind—residuum; source—shales and siltstone
Slope features: Length—short; shape—convex
Dominant present vegetation: Utah juniper, Wyoming big sagebrush, mountain big sagebrush, pine bluegrass
Surface cover: 50 percent pebbles, 5 percent cobbles

Typical Profile

0 to 2 inches—very gravelly sandy loam; 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
2 to 7 inches—very gravelly loam, very gravelly sandy clay loam; 50 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
7 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.6 to 0.8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Burrita Soil

Position on landscape: North-, west-, and east-facing shoulders and side slopes of hills
Parent material: Kind—colluvium over residuum; source—metamorphic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, bottlebrush squirreltail, Sandberg bluegrass, Utah juniper

Typical Profile

0 to 7 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
7 to 14 inches—very cobbly clay, very stony clay loam, very gravelly clay loam; 10 to 55 percent cobbles

and stones and 45 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.9 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Burrita, South Aspect, Soil

Position on landscape: South-facing side slopes of hills
Parent material: Kind—residuum; source—metamorphic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass, small rabbitbrush, bluebunch wheatgrass

Typical Profile

0 to 3 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
3 to 18 inches—very cobbly clay, very stony clay loam, very gravelly clay loam; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7
18 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.1 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Crests and side slopes of hills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Convex, south-facing back slopes of hills
Contrasting features: Hard bedrock at a depth of 20 to 40 inches
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue, Sandberg bluegrass
Inclusion 3
Position on landscape: Concave drainageways and inset fans of hills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye, rubber rabbitbrush
Inclusion 4
Position on landscape: Slightly concave, south-facing back slopes of hills at lower elevations
Contrasting features: Sodium-affected layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Ginex soil:
Site index for common trees: Utah juniper—30
Most important native understory plants: Indian ricegrass, bottlebrush squirreltail, Thurber needlegrass, big sagebrush, arrowleaf balsamroot

Wildlife habitat elements:
Suitability of the Ginex soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous

plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Burrita, south aspect, soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Ginex Soil for Selected Uses
Range seeding: Poor—droughty, rooting depth, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Burrita Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Burrita, South Aspect, Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Ginex soil—VIIs, nonirrigated; Burrita soil—VIIs, nonirrigated; Burrita, south aspect, soil—VIIs, nonirrigated
Range site: Ginex soil—025X059N; Burrita soil—024X005N; Burrita, south aspect, soil—024X028N
Woodland suitability group: Ginex soil—1D

2771—Kram-Hopeka-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,200 to 7,800 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 95 days

Composition

Major components:
• Kram very gravelly very fine sandy loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic—35 percent
• Hopeka very gravelly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, frigid—35 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Aridic Calcixerolls, 15 to 30 percent slopes—Aridic Calcixerolls, loamy-skeletal, mixed, frigid—8 percent
• Inclusion 2: Lithic Xeric Torriorthents, 15 to 30 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—4 percent
• Inclusion 3: Durorthidic Xeric Torriorthents, 15 to 30 percent slopes—Durorthidic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic—3 percent

Characteristics of the Kram Soil

Position on landscape: Lower side slopes of mountains
Parent material: Kind—residuum; source—limestone and dolomite
Slope features: Length—long; shape—convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper, black sagebrush, pine bluegrass, Indian ricegrass, small rabbitbrush

Typical Profile

0 to 3 inches—very gravelly very fine sandy loam; 10 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); granular structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
3 to 10 inches—very gravelly very fine sandy loam, very gravelly loam; 10 to 15 percent cobbles and stones

and 45 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.0 to 1.2 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Hopeka Soil

Position on landscape: Upper side slopes of mountains
Parent material: Kind—residuum; source—limestone and dolomite
Slope features: Length—short; shape—convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper, bluebunch wheatgrass, pine bluegrass, arrowleaf balsamroot

Typical Profile

0 to 8 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

8 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 4 to 10 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.3 to 0.6 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Side slopes of mountains
Slope features: Length—short; shape—convex
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing side slopes of mountains
Contrasting features: Deep soils that have a thick, dark colored surface layer
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue

Inclusion 2
Position on landscape: Concave side slopes of mountains
Contrasting features: Lower content of calcium carbonate
Distinctive present vegetation: Black sagebrush, pine bluegrass

Inclusion 3
Position on landscape: Concave drainageways of mountains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Kram soil:
Site index for common trees: Singleleaf pinyon—25; Utah juniper—25
Most important native understory plants: Indian ricegrass, bottlebrush squirreltail, black sagebrush, Wyoming big sagebrush, ephedra

Woodland on the Hopeka soil:
Site index for common trees: Singleleaf pinyon—20; Utah juniper—20
Most important native understory plants: Bottlebrush squirreltail, Thurber needlegrass, bluebunch wheatgrass, black sagebrush, Wyoming big sagebrush, arrowleaf balsamroot, ephedra, bluegrass

Wildlife habitat elements:
Suitability of the Kram soil for named elements: Wild herbaceous plants (nonirrigated)—poor; coniferous

plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Hopeka soil for named elements: Wild herbaceous plants (nonirrigated)—poor; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Kram Soil for Selected Uses

Range seeding: Poor—droughty, small stones, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Hopeka Soil for Selected Uses

Range seeding: Poor—droughty, small stones, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Kram soil—VIIs, nonirrigated; Hopeka soil—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Kram soil—025X063N; Hopeka soil—025X063N
Woodland suitability group: Kram soil—1D; Hopeka soil—1D

2783—Desatoya, steep-Spike-Desatoya association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,200 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Desatoya very gravelly sandy loam, 30 to 50 percent slopes—Durixerollic Haplargids, clayey over loamy-skeletal, montmorillonitic, mesic—35 percent
• Spike very gravelly sandy loam, 30 to 50 percent slopes—Typic Haplargids, loamy-skeletal, mixed, mesic—35 percent
• Desatoya gravelly sandy loam, 8 to 15 percent slopes—Durixerollic Haplargids, clayey over loamy-skeletal, montmorillonitic, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 15 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—8 percent
• Inclusion 2: Durixerollic Camborthids, 4 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 3: Durixerollic Haplargids, 4 to 15 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—3 percent

Characteristics of the Desatoya, Steep, Soil

Position on landscape: North- and east-facing side slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, bottlebrush squirreltail, Sandberg bluegrass, shadscale

Typical Profile

0 to 3 inches—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-2
3 to 14 inches—gravelly clay loam, gravelly clay; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-7
14 to 60 inches or more—stratified extremely gravelly sandy loam to very gravelly loamy sand; 25 to 35 percent cobbles and stones and 55 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than

10); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 14 inches—slow; below this depth—moderate
Available water capacity: 4.0 to 5.3 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Spike Soil

Position on landscape: South- and west-facing side slopes of fan piedmont remnants
Parent material: Gravelly mixed alluvium
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Wyoming big sagebrush, shadscale, small rabbitbrush, littleleaf horsebrush

Typical Profile

0 to 2 inches—very gravelly sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

2 to 6 inches—very gravelly clay loam, very gravelly sandy clay, very gravelly clay; 5 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; very hard, firm; moderately alkaline (pH 8.4); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC; estimated AASHTO classification—A-2

6 to 60 inches or more—extremely gravelly sandy clay loam, extremely gravelly clay loam, very gravelly loam; 10 to 25 percent cobbles and stones and 65 to 90 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GP-GC, GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.7 to 5.0 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Characteristics of the Desatoya Soil

Position on landscape: Crests and shoulder slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, bottlebrush squirreltail, Sandberg bluegrass, phlox

Typical Profile

0 to 3 inches—gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2, A-4

3 to 14 inches—gravelly clay loam, gravelly clay; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-7

14 to 60 inches or more—stratified extremely gravelly sandy loam to very gravelly loamy sand; 25 to 35 percent cobbles and stones and 55 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 14 inches—slow; below this depth—moderate

Available water capacity: 4.1 to 5.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave side slopes of fan piedmont remnants
Contrasting features: Noncalcareous layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush, small rabbitbrush
Inclusion 2
Position on landscape: Concave inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, small rabbitbrush, basin wildrye
Inclusion 3
Position on landscape: Slightly concave foot slopes of fan piedmont remnants
Contrasting features: Receives additional soil moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, small rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Desatoya, steep, soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Spike soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Desatoya soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Desatoya, Steep, Soil for Selected Uses
Range seeding: Poor—rooting depth, small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage

Ratings of the Spike Soil for Selected Uses
Range seeding: Poor—small stones, excess salt, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Ratings of the Desatoya Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—large stones, slope
Local roads and streets: Moderate—slope, frost action, large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Desatoya, steep, soil—VIIs, nonirrigated; Spike soil—VIIs, nonirrigated; Desatoya soil—VIIs, nonirrigated
Range site: Desatoya, steep, soil—024X030N; Spike soil—024X045N; Desatoya soil—024X030N

2790—Old Camp-Minat-Osoll association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,500 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Old Camp very gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—35 percent
• Minat very gravelly loam, 30 to 50 percent slopes—

Xerollic Camborthids, loamy-skeletal, mixed, mesic—30 percent
• Osoll gravelly loam, 15 to 30 percent slopes—Typic Durorthids, loamy-skeletal, mixed, mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids, 8 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Xeric Torriorthents, 4 to 15 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—4 percent
• Inclusion 3: Rock outcrop—4 percent

Characteristics of the Old Camp Soil

Position on landscape: Crests, shoulders, and upper side slopes of foothills
Parent material: Kind—residuum influenced by volcanic ash; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, rabbitbrush, bottlebrush squirreltail
Surface cover: 50 percent pebbles

Typical Profile

0 to 5 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 55 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
5 to 11 inches—very gravelly clay loam; 5 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.9 to 1.3 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Minat Soil

Position on landscape: North- and west-facing side slopes of foothills
Parent material: Kind—colluvium influenced by volcanic ash; source—various kinds of rock
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Wyoming big sagebrush, little rabbitbrush, bottlebrush squirreltail, pine bluegrass

Typical Profile

0 to 9 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2
9 to 27 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
27 to 60 inches or more—very gravelly fine sandy loam, very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.6 to 6.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Osoll Soil

Position on landscape: South-facing and lower side slopes of foothills
Parent material: Kind—residuum and colluvium influenced by loess; source—volcanic rock
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—gravelly loam; 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, CL-ML; estimated AASHTO classification—A-4
5 to 12 inches—very gravelly loam, very gravelly fine sandy loam; 10 to 25 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
12 to 35 inches—indurated duripan; platy structure; extremely hard, extremely firm
35 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 14 inches
Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 0.9 to 1.3 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower elevation crests and shoulder slopes of foothills
Contrasting features: Slopes of less than 15 percent
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage
Inclusion 2
Position on landscape: Drainageways of foothills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage
Inclusion 3
Position on landscape: Scattered peaks of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Minat soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Osoll soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Minat Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Ratings of the Osoll Soil for Selected Uses
Range seeding: Poor—too arid, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, cemented pan, slope

Local roads and streets: Severe—slope, cemented pan
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, cemented pan
Pond reservoir areas: Severe—slope, cemented pan
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Old Camp soil—VIIs, nonirrigated; Minat soil—VIIs, nonirrigated; Osoll soil—VIIs, nonirrigated
Range site: Old Camp soil—024X005N; Minat soil—024X005N; Osoll soil—024X002N

2791—Old Camp-Colbar-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Old Camp very cobbly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—40 percent
• Colbar very cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—30 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Midraw very cobbly loam, 15 to 30 percent slopes—Xerollic Durargids, clayey, montmorillonitic, mesic, shallow—7 percent
• Inclusion 2: McVegas very gravelly loam, 4 to 15 percent slopes—Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow—5 percent
• Inclusion 3: Haploxerollic Durargids, 4 to 15 percent slopes—Haploxerollic Durargids, fine, montmorillonitic, mesic—3 percent

Characteristics of the Old Camp Soil

Position on landscape: Summits of mountains
Parent material: Kind—residuum influenced by volcanic ash; source—andesite
Slope features: Length—short; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 2 inches—very cobbly loam; 25 to 55 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM, GM-GC, SM-SC; estimated AASHTO classification—A-4, A-2
2 to 14 inches—very stony clay loam, very cobbly clay loam, extremely stony clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—andesite and dacite tuffs
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, bluegrass, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 3 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30

percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6

22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4

26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Shoulders and eroded side slopes of mountains
Slope features: Length—short; shape—convex
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, south-facing side slopes of mountains
Contrasting features: Clayey layer of clay accumulation, duripan at a depth of 10 to 20 inches
Distinctive present vegetation: Bluebunch wheatgrass, Wyoming big sagebrush

Inclusion 2
Position on landscape: Convex, broad crests and saddles of mountains
Contrasting features: Sodium-affected layer of clay accumulation, duripan at a depth of 10 to 20 inches
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Shoulder slopes of mountains
Contrasting features: Clayey layer of clay accumulation, duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock, large stones
Local roads and streets: Severe—depth to bedrock, large stones
Roadfill: Poor—depth to bedrock, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Colbar Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Old Camp soil—VIIs, nonirrigated; Colbar soil—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Old Camp soil—024X005N; Colbar soil—024X005N

2793—Old Camp-Laped association

Map Unit Setting

Position on landscape: Mountains

Elevation: 5,400 to 6,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Old Camp very cobbly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—55 percent
• Laped very cobbly loam, 15 to 30 percent slopes—Typic Durargids, loamy, mixed, mesic, shallow—30 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Xerollic Haplargids, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—5 percent
• Inclusion 3: Xerollic Camborthids, 8 to 15 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—2 percent
• Inclusion 4: Rock outcrop—1 percent

Characteristics of the Old Camp Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum influenced by volcanic ash; source—andesite
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, spiny hopsage, bottlebrush squirreltail

Typical Profile

0 to 2 inches—very cobbly loam; 25 to 55 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM, GM-GC, SM-SC; estimated AASHTO classification—A-4, A-2
2 to 14 inches—very stony clay loam, very cobbly clay loam, extremely stony clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Laped Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—colluvium and residuum; source—mixed tuffs
Slope features: Length—long; shape—slightly concave to convex
Dominant present vegetation: Shadscale, spiny hopsage, bottlebrush squirreltail, pine bluegrass

Typical Profile

0 to 6 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 50 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
6 to 18 inches—gravelly clay loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6, A-7
18 to 23 inches—indurated duripan; massive
23 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.1 to 2.5 inches
Water-supplying capacity: 7 inches

Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, lower, south-facing side slopes of mountains
Contrasting features: Slightly sodium-affected layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush, shadscale
Inclusion 2
Position on landscape: Convex, upper, north-facing side slopes of mountains
Contrasting features: Deep
Distinctive present vegetation: Mountain big sagebrush, Wyoming big sagebrush
Inclusion 3
Position on landscape: Colluvial foot slopes of mountains
Contrasting features: Deep
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 4
Position on landscape: Random small peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Laped soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope, large stones
Local roads and streets: Severe—depth to bedrock, slope, large stones
Roadfill: Poor—depth to bedrock, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Laped Soil for Selected Uses
Range seeding: Poor—droughty, too arid, large stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, cemented pan, slope
Local roads and streets: Severe—cemented pan, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, slope
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Old Camp soil—VIIs, nonirrigated; Laped soil—VIIs, nonirrigated
Range site: Old Camp soil—024X005N; Laped soil—024X002N

2794—Old Camp-Kram Variant-Rock outcrop association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,000 to 5,700 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Old Camp gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—40 percent
• Kram Variant very gravelly loam, 15 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—25 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Durorthids, 15 to 30 percent slopes—Xerollic Durorthids, loamy-skeletal, mixed, mesic—9 percent
• Inclusion 2: Typic Camborthids, 4 to 15 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—3 percent
• Inclusion 3: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—3 percent

Characteristics of the Old Camp Soil

Position on landscape: North-, west-, and east-facing side slopes of hills
Parent material: Kind—residuum; source—andesite
Slope features: Length—short; shape—smooth to concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Sandberg bluegrass

Typical Profile

0 to 2 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
2 to 14 inches—very stony clay loam, very cobbly clay loam, extremely stony sandy clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Kram Variant Soil

Position on landscape: Summits and south-facing side slopes of hills
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, horsebrush, spiny hopsage, bottlebrush squirreltail, Indian ricegrass
Surface cover: 70 percent pebbles, 5 percent cobbles, 2 percent stones

Typical Profile

0 to 3 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
3 to 11 inches—extremely gravelly loam; 5 to 10 percent cobbles and stones and 70 to 80 percent pebbles (by weight); subangular blocky structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2
11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.9 to 1.3 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Scattered peaks of hills
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Position on landscape: Side slopes of rock pediments adjacent to hills
Contrasting features: Duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Black sagebrush
Inclusion 2
Position on landscape: Smooth to concave, colluvial toe slopes of hills
Contrasting features: Deep soils that have a noncalcareous subsoil
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Concave inset fans

Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Kram Variant soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Kram Variant Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Old Camp soil—VIIe, nonirrigated; Kram Variant soil—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Old Camp soil—024X005N; Kram Variant soil—024X047N

2796—Old Camp-Osoll-Colbar association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Old Camp gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—40 percent
• Osoll gravelly loam, 15 to 30 percent slopes—Typic Durorthids, loamy-skeletal, mixed, mesic, shallow—30 percent
• Colbar gravelly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Typic Haplargids, 15 to 30 percent slopes—Typic Haplargids, fine-loamy, mixed, mesic—6 percent
• Inclusion 2: Lithic Camborthids, 50 to 75 percent slopes—Lithic Camborthids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 3: Lithic Xerollic Haplargids, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—3 percent

Characteristics of the Old Camp Soil

Position on landscape: Crests and west-facing side slopes of hills
Parent material: Kind—residuum; source—andesite
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass, Indian ricegrass

Typical Profile

0 to 2 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
2 to 14 inches—very stony clay loam, very cobbly clay loam, extremely stony sandy clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Osoll Soil

Position on landscape: South- and east-facing side slopes of hills
Parent material: Kind—residuum influenced by loess; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—gravelly loam; 25 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, CL-ML; estimated AASHTO classification—A-4
5 to 12 inches—very gravelly loam, very gravelly fine sandy loam; 10 to 25 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
12 to 35 inches—indurated duripan; platy structure; extremely hard, extremely firm
35 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 14 inches
Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 0.9 to 1.3 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of hills
Parent material: Kind—residuum; source—andesite, rhyolitic tuff
Slope features: Length—short; shape—concave
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass, Indian ricegrass

Typical Profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SM, GM, GM-GC; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, lower side slopes of hills
Contrasting features: Bedrock at a depth of more than 40 inches
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Convex, eroded side slopes of hills
Contrasting features: Slopes of 50 to 75 percent
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Convex, lower, east- and north-facing side slopes of hills
Contrasting features: Calcareous throughout the profile
Distinctive present vegetation: Black sagebrush, shadscale, Indian ricegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Osoll soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Osoll Soil for Selected Uses
Range seeding: Poor—too arid, erodes easily, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, cemented pan, slope
Local roads and streets: Severe—slope, cemented pan
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, cemented pan
Pond reservoir areas: Severe—slope, cemented pan
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Colbar Soil for Selected Uses
Range seeding: Fair—too arid, droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, small stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Old Camp soil—VIIe, nonirrigated; Osoll soil—VIIe, nonirrigated; Colbar soil—VIe, nonirrigated
Range site: Old Camp soil—024X005N; Osoll soil—024X002N; Colbar soil—024X005N

2797—Old Camp, steep-Colbar-Old Camp association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Old Camp gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—45 percent
• Colbar cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—25 percent
• Old Camp very cobbly loam, 8 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 4 to 15 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 2: Lithic Xerollic Haplargids, 8 to 30 percent

slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Lithic Haplargids, 15 to 50 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 4: Rock outcrop—3 percent

Characteristics of the Old Camp, Steep, Soil

Position on landscape: Mid and lower side slopes of hills
Parent material: Kind—residuum; source—andesite
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

0 to 2 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
2 to 14 inches—very stony clay loam, very cobbly clay loam, extremely stony sandy clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Colbar Soil

Position on landscape: Upper side slopes of hills
Parent material: Kind—residuum and colluvium; source—andesite, rhyolitic tuff
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile

0 to 3 inches—cobbly loam; 35 to 45 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam, cobbly loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Old Camp Soil

Position on landscape: Crests and shoulder slopes of hills
Parent material: Kind—residuum; source—andesite
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, black sagebrush

Typical Profile

0 to 2 inches—very cobbly loam; 25 to 55 percent

cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM, GM-GC, SM-SC; estimated AASHTO classification—A-4, A-2

2 to 14 inches—very stony loam, very cobbly clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6

14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave toe slopes of hills
Contrasting features: Bedrock at a depth of more than 60 inches
Distinctive present vegetation: Mountain big sagebrush, bluebunch wheatgrass, bluegrass

Inclusion 2
Position on landscape: Slightly convex, upper elevation crests and shoulder slopes of hills
Contrasting features: Calcareous subsoil
Distinctive present vegetation: Bottlebrush squirreltail, black sagebrush

Inclusion 3
Position on landscape: South-facing foot slopes of hills
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Shadscale, bud sagebrush, bluegrass

Inclusion 4
Position on landscape: Scattered peaks of hills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Old Camp, steep, soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Old Camp, Steep, Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Colbar Soil for Selected Uses
Range seeding: Fair—droughty, large stones, too arid
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock, large stones
Local roads and streets: Severe—depth to bedrock, large stones
Roadfill: Poor—depth to bedrock, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Old Camp, steep, soil—VIIe, nonirrigated; Colbar soil—VIe, nonirrigated; Old Camp soil—VIIs, nonirrigated
Range site: Old Camp, steep, soil—024X005N; Colbar soil—024X005N; Old Camp soil—024X005N

2798—Old Camp-Atlow-Osoll association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Old Camp gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—40 percent
• Atlow very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—30 percent
• Osoll very gravelly loam, 30 to 50 percent slopes—Typic Durorthids, loamy-skeletal, mixed, mesic, shallow—15 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids, 4 to 15 percent slope—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—6 percent
• Inclusion 2: Lithic Xeric Torriorthents, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 3: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—2 percent
• Inclusion 4: Rock outcrop—2 percent

Characteristics of the Old Camp Soil

Position on landscape: Side slopes of hills
Parent material: Kind—residuum influenced by loess and volcanic ash; source—andesite
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, Indian ricegrass

Typical Profile

0 to 2 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
2 to 14 inches—very stony clay loam, very cobbly clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Atlow Soil

Position on landscape: Upper side slopes of hills
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, spiny hopsage, bottlebrush squirreltail, Indian ricegrass

Typical Profile

0 to 3 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
3 to 14 inches—very gravelly clay loam, very cobbly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.3 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Osoll Soil

Position on landscape: Eroded, lower side slopes of hills
Parent material: Kind—colluvium over residuum influenced by loess; source—volcanic rock
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bluegrass

Typical Profile

0 to 5 inches—very gravelly loam; 50 to 75 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, CL-ML; estimated AASHTO classification—A-4
5 to 12 inches—very gravelly loam, very gravelly fine sandy loam; 10 to 25 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
12 to 35 inches—indurated duripan; platy structure; extremely hard, extremely firm
35 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 14 inches
Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 0.9 to 1.3 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Crests and shoulder slopes of hills
Contrasting features: Slopes of 4 to 15 percent
Distinctive present vegetation: Black sagebrush, bluegrass
Inclusion 2
Position on landscape: Colluvial side slopes of hills below rock outcrop
Contrasting features: Bedrock at a depth of 4 to 10 inches
Distinctive present vegetation: Wyoming big sagebrush, downy rabbitbrush
Inclusion 3
Position on landscape: Inset fans and colluvial toe slopes of hills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Big sagebrush, bluebunch wheatgrass, Thurber needlegrass
Inclusion 4
Position on landscape: Scattered peaks of hills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Osoll soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Atlow Soil for Selected Uses

Range seeding: Poor—droughty, small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Osoll Soil for Selected Uses

Range seeding: Poor—droughty, too arid, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, cemented pan, slope
Local roads and streets: Severe—slope, depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, cemented pan
Pond reservoir areas: Severe—slope, cemented pan
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Old Camp soil—VIIe, nonirrigated; Atlow soil—VIIs, nonirrigated; Osoll soil—VIIs, nonirrigated
Range site: Old Camp soil—024X005N; Atlow soil—024X030N; Osoll soil—024X002N

2800—Old Camp-Walti-Softscrabble association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,600 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 70 days

Composition

Major components:
• Old Camp extremely gravelly loam, 50 to 75 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—35 percent
• Walti very cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, fine, montmorillonitic, frigid—35 percent
• Softscrabble very cobbly loam, 30 to 50 percent slopes—Pachic Argixerolls, loamy-skeletal, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 8 to 15 percent slopes—Xerollic Haplargids, clayey-skeletal, mixed, frigid—7 percent
• Inclusion 2: Rock outcrop—3 percent
• Inclusion 3: Aridic Haploxerolls, 30 to 75 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 4: Rubble land—2 percent

Characteristics of the Old Camp Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—andesite
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, bluegrass, Thurber needlegrass

Typical Profile

0 to 6 inches—extremely gravelly loam; 10 to 20 percent cobbles and stones and 75 to 85 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
6 to 16 inches—very cobbly clay loam, very stony loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
16 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.0 to 1.3 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D

Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Walti Soil

Position on landscape: North- and east-facing shoulders and side slopes of mountains
Parent material: Kind—residuum; source—rhyolite
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, Idaho fescue

Typical Profile

0 to 4 inches—very cobbly loam; 30 to 40 percent cobbles and stones and 20 to 35 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
4 to 10 inches—gravelly clay loam, clay loam; 0 to 10 percent cobbles and stones and 10 to 35 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 6.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
10 to 30 inches—clay, gravelly clay; 0 to 10 percent cobbles and stones and 10 to 35 percent pebbles (by weight); prismatic structure; very hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH, MH; estimated AASHTO classification—A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 3.7 to 4.8 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Softscrabble Soil

Position on landscape: North- and east-facing pockets and side slopes of mountains
Parent material: Kind—colluvium over residuum; source—volcanic rock
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, currant, bluebunch wheatgrass, Idaho fescue

Typical Profile

0 to 16 inches—very cobbly loam; 40 to 50 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; soft, very friable; mildly alkaline (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
16 to 30 inches—very cobbly clay loam; 30 to 45 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7
30 to 60 inches—very gravelly clay loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 6.0 to 7.8 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, windswept crests of mountains
Contrasting features: Bedrock at a depth of 30 to 40 inches
Distinctive present vegetation: Low sagebrush, black sagebrush, bluegrass

Inclusion 2
Position on landscape: Eroded side slopes and scattered peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Concave side slopes of mountains below rock outcrop and rubble land
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Oceanspray, snowberry, currant
Inclusion 4
Position on landscape: Rock stripes below Rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Walti soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Softscrabble soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—slope, small stones, depth to bedrock
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope, depth to bedrock
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, depth to bedrock, slope
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—large stones

Ratings of the Walti Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—low strength, depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, too clayey, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer, hard to pack

Ratings of the Softscrabble Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—slope, small stones
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, slope, small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Old Camp soil—VIIs, nonirrigated; Walti soil—VIIs, nonirrigated; Softscrabble soil—VIIs, nonirrigated
Range site: Old Camp soil—024X035N; Walti soil—024X027N; Softscrabble soil—024X021N

2801—Old Camp-Rock outcrop-Colbar association, strongly sloping

Map Unit Setting

Position on landscape: Plateaus
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Old Camp very cobbly loam, 8 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—50 percent
• Rock outcrop—20 percent
• Colbar very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—6 percent
• Inclusion 2: Typic Haplargids, 15 to 30 percent slopes—Typic Haplargids, fine-loamy, mixed, mesic—6 percent
• Inclusion 3: Xerollic Haplargids, 4 to 15 percent

slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—3 percent

Characteristics of the Old Camp Soil

Position on landscape: Summits of plateaus
Parent material: Kind—residuum; source—rhyolitic tuffs
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, ephedra, bottlebrush squirreltail, bluegrass

Typical Profile

0 to 3 inches—very cobbly loam; 35 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC, SM-SC, SC; estimated AASHTO classification—A-2, A-4, A-6
3 to 15 inches—very cobbly clay loam; 35 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 1.9 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Rimrock on shoulders and cliffs of eroded side slopes of plateaus
Slope features: Length—short; shape—convex
Dominant present vegetation: None

Characteristics of the Colbar Soil

Position on landscape: Side slopes of plateaus
Parent material: Kind—residuum; source—rhyolitic tuffs
Slope features: Length—short; shape—concave
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, bottlebrush squirreltail, small rabbitbrush, littleleaf horsebrush

Typical Profile

0 to 3 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam, cobbly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, south-facing side slopes of plateaus
Contrasting features: Clayey layer of clay accumulation
Distinctive present vegetation: Wyoming big sagebrush, shadscale
Inclusion 2
Position on landscape: Foot slopes of plateaus

Contrasting features: Very deep
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Concave, lower, north-facing side slopes of plateaus
Contrasting features: Deep soils, receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, bluebunch wheatgrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, large stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Colbar Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Old Camp soil—VIIs, nonirrigated; Rock outcrop—VIIIs; Colbar soil—VIIs, nonirrigated
Range site: Old Camp soil—024X047N; Colbar soil—024X005N

2802—Old Camp-Rock outcrop-Colbar association, steep

Map Unit Setting

Position on landscape: Plateaus
Elevation: 5,200 to 6,200 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Old Camp extremely cobbly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—45 percent
• Rock outcrop—25 percent
• Colbar very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 15 to 30 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Rubble land—3 percent
• Inclusion 3: Cumulic Haploxerolls, 8 to 15 percent slopes—Cumulic Haploxerolls, loamy-skeletal, mixed, mesic—2 percent

Characteristics of the Old Camp Soil

Position on landscape: South-, east-, and west-facing side slopes of plateaus
Parent material: Kind—residuum and colluvium; source—tuffs
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, ephedra, bluegrass, bottlebrush squirreltail

Typical Profile

0 to 3 inches—extremely cobbly loam; 50 to 60 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2
3 to 15 inches—very cobbly clay loam; 35 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 1.9 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Rimrock and cliffs of plateaus
Slope features: Length—short; shape—convex
Dominant present vegetation: Barren

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of plateaus
Parent material: Kind—colluvium and residuum; source—tuffs
Slope features: Length—long; shape—slightly concave to convex
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, Douglas rabbitbrush, bottlebrush squirreltail
Surface cover: 10 percent pebbles, 30 percent cobbles

Typical Profile

0 to 3 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam, cobbly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—.2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave foot slopes of plateaus
Contrasting features: Deep
Distinctive present vegetation: Wyoming big sagebrush, shadscale
Inclusion 2
Position on landscape: Side slopes of plateaus below Rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Drainageways of plateaus
Contrasting features: Very deep soil, receives additional soil moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to rock, large stones, slope

Shallow excavations: Severe—depth to rock, slope, large stones
Local roads and streets: Severe—depth to rock, slope, large stones
Roadfill: Poor—depth to rock, slope, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Colbar Soil for Selected Uses

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to rock, slope, large stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Old Camp soil—VIIs, nonirrigated; Rock outcrop—VIIIs; Colbar soil—VIIs, nonirrigated
Range site: Old Camp soil—024X047N; Colbar soil—024X005N

3071—Allor-Wieland association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 6,200 to 6,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Allor gravelly loam, 4 to 15 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—50 percent
• Wieland gravelly loam, 4 to 15 percent slopes—Durixerollic Haplargids, fine, montmorillonitic, mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Haploxerollic Durargids, 2 to 8 percent slopes—Haploxerollic Durargids, fine-loamy, mixed, mesic—7 percent
• Inclusion 2: Haploxerollic Durargids, 4 to 15 percent slopes—Haploxerollic Durargids, fine, montmorillonitic, mesic—4 percent
• Inclusion 3: Durixerollic Haplargids, 0 to 4 percent slopes—Durixerollic Haplargids, fine, montmorillonitic, mesic—4 percent

Characteristics of the Allor Soil

Position on landscape: Side slopes and foot slopes of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Thurber needlegrass

Typical Profile

0 to 12 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-2, A-4
12 to 34 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-6, A-7
34 to 60 inches or more—gravelly loamy sand, very gravelly loamy sand; 0 to 10 percent cobbles and stones and 35 to 55 percent pebbles (by weight); massive; very hard, firm; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 4.7 to 6.0 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Wieland Soil

Position on landscape: Summits and shoulders of fan piedmont remnants

Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex to smooth
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Thurber needlegrass

Typical Profile

0 to 8 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL, SC; estimated AASHTO classification—A-6
8 to 20 inches—gravelly clay, clay; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); prismatic structure; hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CH, SC; estimated AASHTO classification—A-7
20 to 60 inches or more—loam, gravelly loam, gravelly sandy loam; 0 to 5 percent cobbles and stones and 10 to 45 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 5.7 to 9.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper summits of fan piedmont remnants
Contrasting features: Strongly cemented duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass

Inclusion 2
Position on landscape: Slightly convex, upper side slopes of fan piedmont remnants
Contrasting features: Strongly cemented duripan at a depth of 20 to 40 inches
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass

Inclusion 3
Position on landscape: Concave drainageways on fan piedmont remnants
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Allor soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Wieland soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Allor Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—slope, frost action, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Wieland Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer

Interpretive Groups

Capability classification: Allor soil—VIs, nonirrigated; Wieland soil—VIs, nonirrigated

Range site: Allor soil—028B010N; Wieland soil—028B010N

3111—Ninemile-Zoesta-Itca association

Map Unit Setting

Position on landscape: Mountains and foothills
Elevation: 6,800 to 7,400 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Ninemile extremely cobbly loam, 15 to 30 percent slopes—Lithic Argixerolls, clayey, montmorillonitic, frigid—55 percent
• Zoesta cobbly loam, 8 to 15 percent slopes—Xerollic Paleargids, fine, montmorillonitic, frigid—15 percent
• Itca extremely stony loam, 15 to 30 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—10 percent
• Inclusion 2: Aridic Argixerolls, 2 to 8 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—3 percent
• Inclusion 3: Punchbowl very gravelly loam, 8 to 15 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, frigid—2 percent

Characteristics of the Ninemile Soil

Position on landscape: Side slopes of mountains and foothills
Parent material: Kind—residuum influenced by volcanic ash; source—andesite
Slope features: Length—short; shape—plane to convex
Dominant present vegetation: Low sagebrush, Thurber needlegrass, bluegrass, Utah juniper

Typical Profile

0 to 9 inches—extremely cobbly loam; 45 to 65 percent cobbles and stones and 55 to 70 percent pebbles (by weight); granular structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
9 to 19 inches—clay, gravelly clay; 0 to 15 percent cobbles and stones and 0 to 35 percent pebbles (by weight); prismatic structure; hard, firm; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Very slow
Available water capacity: 2.0 to 3.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Zoesta Soil

Position on landscape: Colluvial foot slopes of foothills and mountains
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, downy rabbitbrush

Typical Profile

0 to 7 inches—cobbly loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
7 to 23 inches—clay; 0 to 10 percent cobbles and stones and 5 to 15 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
23 to 31 inches—gravelly clay loam, gravelly clay; 30 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
31 to 60 inches—very gravelly clay loam, very gravelly loam; 55 to 70 percent pebbles (by weight); massive; very hard, very firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Very slow
Available water capacity: 7.9 to 9.1 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Itca Soil

Position on landscape: Upper crests and side slopes of mountains and foothills adjacent to rock outcrop
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, bluegrass, Utah juniper
Surface cover: 15 percent stones

Typical Profile

0 to 9 inches—extremely stony loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-4, A-6
9 to 17 inches—very cobbly clay loam, extremely gravelly clay; 0 to 55 percent cobbles and stones and 25 to 70 percent pebbles (by weight); prismatic structure; hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC; estimated AASHTO classification—A-2, A-7
17 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 1.7 to 2.5 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Scattered peaks, rimrock, and cliffs on side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Concave foot slopes adjacent to drainageways
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye, bluegrass
Inclusion 3
Position on landscape: Crests of foothills and mountains
Contrasting features: Loamy throughout the profile
Distinctive present vegetation: Black sagebrush, Indian ricegrass, rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat, woodland

Woodland on the Itca soil:
Site index for common trees: Singleleaf pinyon—70
Most important native understory plants: Mountain big sagebrush, Idaho fescue, bluebunch wheatgrass

Wildlife habitat elements:
Suitability of the Ninemile soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Zoesta soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Itca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Ninemile Soil for Selected Uses
Range seeding: Poor—rooting depth, large stones
Daily cover for landfill: Poor—depth to rock, hard to pack, too clayey
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope, low strength
Roadfill: Poor—depth to rock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, slope, small stones
Pond reservoir areas: Severe—slope, depth to rock
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Zoesta Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Fair—shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Ratings of the Itca Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—slope, depth to rock, large stones
Local roads and streets: Severe—depth to rock, large stones, slope
Roadfill: Poor—depth to rock, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, too clayey
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Ninemile soil—VIIs, nonirrigated; Zoesta soil—VIIs, nonirrigated; Itca soil—VIIs, nonirrigated
Range site: Ninemile soil—028B037N; Zoesta soil—028B045N; Itca soil—025X061N
Woodland suitability group: Itca soil—2D

3121—Walti-Softscrabble-Bucan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Walti extremely cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, fine, montmorillonitic, frigid—45 percent
• Softscrabble very cobbly loam, 30 to 50 percent slopes—Pachic Argixerolls, loamy-skeletal, mixed, frigid—20 percent
• Bucan very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Cumulic Haplaquolls, drained, 2 to 8 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed (calcareous), frigid—7 percent
• Inclusion 2: Rock outcrop—4 percent
• Inclusion 3: Pachic Haploxerolls, 4 to 15 percent slopes—Pachic Haploxerolls, fine-loamy, mixed, frigid—3 percent
• Inclusion 4: Rubble land—1 percent

Characteristics of the Walti Soil

Position on landscape: Summits and shoulders of mountains
Parent material: Kind—residuum; source—rhyolite, tuffs, and quartzite
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, Idaho fescue

Typical Profile

0 to 4 inches—extremely cobbly loam; 50 to 60 percent cobbles and stones or 60 to 75 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
4 to 10 inches—gravelly clay loam, clay loam; 0 to 10 percent cobbles and stones and 10 to 35 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 6.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
10 to 30 inches—clay, gravelly clay; 0 to 10 percent cobbles and stones and 10 to 35 percent pebbles (by weight); prismatic structure; very hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH, MH; estimated AASHTO classification—A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Very slow
Available water capacity: 3.7 to 4.8 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D

Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Softscrabble Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—volcanic rock
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, currant, bluebunch wheatgrass, Idaho fescue

Typical Profile

0 to 16 inches—very cobbly loam; 40 to 50 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
16 to 30 inches—very cobbly clay loam; 30 to 45 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7
30 to 60 inches—very gravelly clay loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 6.3 to 8.4 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Bucan Soil

Position on landscape: South-, east-, and west-facing side slopes of mountains
Parent material: Kind—residuum capped with loess influenced by volcanic ash; source—volcanic rock
Slope features: Length—long; shape—concave
Dominant present vegetation: Thurber needlegrass, Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 5 inches—very cobbly loam; 25 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
5 to 30 inches—clay; 0 to 10 percent cobbles and stones and 10 to 20 percent pebbles (by weight); platy structure; very hard, very firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH; estimated AASHTO classification—A-7
30 to 52 inches—cobbly clay, gravelly clay loam, gravelly clay; 10 to 30 percent cobbles and stones and 15 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-7
52 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 7.2 to 8.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—3; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1

Position on landscape: Dissected drainageways and seeps of mountains

Contrasting features: Very deep, somewhat poorly drained
Distinctive present vegetation: Willow, rose, basin wildrye

Inclusion 2
Position on landscape: Rimrock on shoulders of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Concave snow pockets on north-facing side slopes of mountains
Contrasting features: Receives additional moisture from drifted snow
Distinctive present vegetation: Aspen, rose, bluegrass, mountain brome

Inclusion 4
Position on landscape: Rock stripes on side slopes of mountains
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Other inclusions of minor extent
Position on landscape: Undissected drainageways and seeps of mountains
Contrasting features: Poorly drained, very deep, wet soil
Distinctive present vegetation: Nevada bluegrass, sedge, rush, willow

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Walti soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Softscrabble soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bucan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Walti Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to rock, slope, hard to pack
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—low strength, depth to rock, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, too clayey, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Softscrabble Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—slope, small stones
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, slope, small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Bucan Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—large stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—low strength, shrink-swell, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too clayey, slope, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Walti soil—VIIs, nonirrigated; Softscrabble soil—VIIs, nonirrigated; Bucan soil—VIIs, nonirrigated
Range site: Walti soil—024X027N; Softscrabble soil—024X021N; Bucan soil—024X028N

3122—Walti-Sumine-Softscrabble association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Walti gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, fine, montmorillonitic, frigid—35 percent
• Sumine cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—30 percent
• Softscrabble cobbly loam, 30 to 50 percent slopes—Pachic Argixerolls, loamy-skeletal, mixed, frigid—20 percent

Contrasting inclusions:
• Inclusion 1: Rock outcrop—5 percent
• Inclusion 2: Lithic Xerollic Haplargids, 4 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—6 percent
• Inclusion 3: Cumulic Haploxerolls, 4 to 15 percent slopes—Cumulic Haploxerolls, fine-loamy, mixed, frigid—2 percent
• Inclusion 4: Rubble land—2 percent

Characteristics of the Walti Soil

Position on landscape: Stable shoulders and west- and east-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, Idaho fescue, bluebunch wheatgrass

Typical Profile

0 to 4 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, GM-GC, CL-ML; estimated AASHTO classification—A-4
4 to 10 inches—gravelly clay loam, clay loam; 0 to 10 percent cobbles and stones and 10 to 35 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 6.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
10 to 30 inches—clay, gravelly clay; 0 to 10 percent cobbles and stones and 10 to 35 percent pebbles (by weight); prismatic structure; very hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH, MH; estimated AASHTO classification—A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Very slow
Available water capacity: 3.7 to 4.8 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Sumine Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass
Surface cover: 15 percent pebbles, 15 percent cobbles

Typical Profile

0 to 10 inches—cobbly loam; 20 to 30 percent cobbles and stones and 15 to 25 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
10 to 30 inches—very gravelly clay loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.0 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Softscrabble Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—volcanic rock
Slope features: Length—short; shape—concave

Dominant present vegetation: Mountain big sagebrush, currant, serviceberry, Idaho fescue

Typical Profile

0 to 16 inches—cobbly loam; 25 to 40 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4

16 to 30 inches—very cobbly clay loam; 30 to 45 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7

30 to 60 inches or more—very gravelly clay loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 6.3 to 8.4 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Rimrock on shoulders and cliffs on eroded side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 2
Position on landscape: Convex, windswept mountain crests, shoulders, and upper side slopes of mountains
Contrasting features: Bedrock at a depth of 10 to 20 inches
Distinctive present vegetation: Idaho fescue, mountain big sagebrush

Inclusion 3
Position on landscape: Concave drainageways of mountains
Contrasting features: Receives additional moisture from runoff

Inclusion 4
Position on landscape: Rock stripes on side slopes of mountains
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Walti soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Softscrabble soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Walti Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to rock, hard to pack, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—low strength, depth to rock, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer, hard to pack

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to rock, slope, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Softscrabble Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Interpretive Groups

Capability classification: Walti soil—VIIe, nonirrigated; Sumine soil—VIIe, nonirrigated; Softscrabble soil—VIIe, nonirrigated
Range site: Walti soil—023X027N; Sumine soil—024X029N; Softscrabble soil—024X021N

3127—Walti-Cleavage-Softscrabble association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 7,900 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Walti cobbly loam, 15 to 30 percent slopes—Aridic Argixerolls, fine, montmorillonitic, frigid—35 percent
• Cleavage extremely gravelly loam, 4 to 15 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—25 percent
• Softscrabble gravelly loam, 15 to 30 percent slopes—Pachic Argixerolls, loamy-skeletal, mixed, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 8 to 15 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Cumulic Haplaquolls, 2 to 8 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed (calcareous), frigid—4 percent
• Inclusion 3: Itca very stony loam, 15 to 30 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—3 percent
• Inclusion 4: Rock outcrop—3 percent

Characteristics of the Walti Soil

Position on landscape: South-, east-, and west-facing side slopes of mountains
Parent material: Kind—residuum and colluvium; source—rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, Idaho fescue, bluebunch wheatgrass

Typical Profile

0 to 4 inches—cobbly loam; 25 to 40 percent cobbles and stones and 20 to 35 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
4 to 10 inches—gravelly clay loam, clay loam; 0 to 10 percent cobbles and stones and 10 to 35 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 6.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
10 to 30 inches—clay, gravelly clay; 0 to 10 percent cobbles and stones and 10 to 35 percent pebbles (by weight); prismatic structure; very hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH, MH; estimated AASHTO classification—A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Very slow
Available water capacity: 3.7 to 4.8 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Cleavage Soil

Position on landscape: Windswept crests and shoulders of mountains

Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, black sagebrush, bluegrass, low rabbitbrush

Typical Profile

0 to 4 inches—extremely gravelly loam; 0 to 10 percent cobbles and stones and 75 to 85 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 0 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Softscrabble Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—volcanic rock
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, serviceberry, Idaho fescue

Typical Profile

0 to 9 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
9 to 30 inches—very cobbly clay loam; 30 to 45 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7
30 to 60 inches or more—gravelly clay loam; 5 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 6.1 to 8.2 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing toe slopes of mountains
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Wyoming and mountain big sagebrush, bluegrass
Inclusion 2
Position on landscape: Adjacent to seeps, springs, and drainageways
Contrasting features: Somewhat poorly drained
Distinctive present vegetation: Basin big sagebrush, bluebunch wheatgrass
Inclusion 3
Position on landscape: Crests of mountains near rock outcrop
Contrasting features: Bedrock at a depth of 10 to 20 inches, clay subsoil
Distinctive present vegetation: Singleleaf pinyon, Utah juniper, mountain big sagebrush, Idaho fescue

Inclusion 4
Position on landscape: Rimrock on shoulders of mountains and scattered peaks
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Walti soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Softscrabble soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Walti Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to rock, hard to pack, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—low strength, depth to rock, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Cleavage Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Roadfill: Poor—depth to rock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Softscrabble Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Interpretive Groups

Capability classification: Walti soil—VIIs, nonirrigated; Cleavage soil—VIIs, nonirrigated; Softscrabble soil—VIe, nonirrigated
Range site: Walti soil—024X027N; Cleavage soil—024X016N; Softscrabble soil—024X021N

3134—Itca-Clanalpine-Sumine association

Map Unit Setting

Position on landscape: Mountains
Elevation: 7,000 to 8,200 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 70 days

Composition

Major components:
• Itca extremely cobbly fine sandy loam, 15 to 30 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—35 percent
• Clanalpine extremely cobbly loam, 30 to 50 percent slopes—Typic Argixerolls, loamy-skeletal, mixed, frigid—25 percent
• Sumine very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop and Rubble land—5 percent
• Inclusion 2: Softscrabble gravelly loam, 15 to 50 percent slopes—Pachic Argixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Walti very stony fine sandy loam, 8 to 30 percent slopes—Aridic Argixerolls, fine, montmorillonitic, frigid—4 percent
• Inclusion 4: Cumulic Haploxerolls, 2 to 8 percent slopes—Cumulic Haploxerolls, fine-loamy, mixed, frigid—1 percent

Characteristics of the Itca Soil

Position on landscape: Crests and side slopes of mountains adjacent to rock outcrop
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, Idaho fescue, Utah juniper

Typical Profile

0 to 9 inches—extremely cobbly fine sandy loam; 55 to

65 percent cobbles and stones and 45 to 55 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2

9 to 17 inches—very gravelly clay, very gravelly clay loam; 10 to 20 percent cobbles and stones and 50 to 60 percent pebbles (by weight); angular blocky structure; hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-7

17 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.7 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Clanalpine Soil

Position on landscape: North- and east-facing side slopes of mcuntains
Parent material: Kind—colluvium over residuum; source—andesite, rhyolitic tuff
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, Idaho fescue, mountainmahogany
Surface cover: 20 percent pebbles, 40 percent cobbles, 5 percent stones

Typical Profile

0 to 12 inches—extremely cobbly loam; 45 to 55 percent cobbles and stones or 65 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

12 to 38 inches—very cobbly clay loam, very cobbly loam, very gravelly clay loam; 15 to 35 percent cobbles and stones and 40 to 65 percent pebbles (by weight); angular blocky structure; hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6

38 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 4.2 to 4.8 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Sumine Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—quartzite
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, bluegrass

Typical Profile

0 to 10 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 40 to 55 percent pebbles (by weight); granular structure; soft, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4

10 to 30 inches—very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7

30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderate

Available water capacity: 2.8 to 4.1 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Rimrock and rock stripes on side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface, more than 90 percent stones on the surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Concave, north-facing snow pockets and on side slopes of mountains
Contrasting features: Bedrock at a depth of more than 60 inches
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue, serviceberry
Inclusion 3
Position on landscape: Smooth summits of mountains
Contrasting features: Bedrock at a depth of 20 to 30 inches, clay subsoil
Distinctive present vegetation: Low sagebrush, bluegrass, Idaho fescue
Inclusion 4
Position on landscape: Concave drainageways of mountains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, woodland

Woodland on the Itca soil:
Site index for common trees: Singleleaf pinyon—65
Most important native understory plants: Mountain big sagebrush, Idaho fescue

Woodland on the Clanalpine soil:
Site index for common trees: Singleleaf pinyon—75
Most important native understory plants: Mountain big sagebrush, Idaho fescue

Wildlife habitat elements:
Suitability of the Itca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Clanalpine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Itca Soil for Selected Uses
Range seeding: Poor—large stones, droughty
Daily cover for landfill: Poor—depth to rock, too clayey, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Clanalpine Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Itca soil—VIIs, nonirrigated; Clanalpine soil—VIIs, nonirrigated; Sumine soil—VIIs, nonirrigated
Range site: Itca soil—025X061N; Clanalpine soil—025X061N; Sumine soil—024X029N

Woodland suitability group: Itca soil—2D; Clanalpine soil—2R

3150—Robson-Wiskan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 8,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Robson very gravelly loam, 15 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—50 percent
• Wiskan gravelly loam, 15 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—35 percent
Contrasting inclusions:
• Inclusion 1: Aridic Argixerolls, 30 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—10 percent
• Inclusion 2: Rock outcrop—3 percent
• Inclusion 3: Cleavage extremely gravelly very fine sandy loam, 15 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Robson Soil

Position on landscape: Crests and west-, east-, and lower north-facing side slopes of mountains
Parent material: Kind—residuum; source—silicious rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, small rabbitbrush

Typical Profile

0 to 5 inches—very gravelly loam; 5 to 15 percent cobbles and stones and 60 to 70 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2
5 to 15 inches—very cobbly clay, extremely cobbly clay; 50 to 80 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM; estimated AASHTO classification—A-7
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 0.9 to 1.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Wiskan Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—thinly loess mantled residuum; source—chert, volcanic rock
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Black sagebrush, Thurber needlegrass, bluebunch wheatgrass

Typical Profile

0 to 16 inches—gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); granular structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, SM-SC, ML, CL-ML; estimated AASHTO classification—A-4
16 to 28 inches—very gravelly clay loam, very gravelly loam, extremely gravelly clay loam; 10 to 25 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 2.4 to 3.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6

Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper, north-facing side slopes of mountains
Contrasting features: Receives additional moisture from drifted snow
Distinctive present vegetation: Low sagebrush, Idaho fescue
Inclusion 2
Position on landscape: Scattered peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Upper elevation crests of mountains
Contrasting features: Thick, dark colored surface layer, bedrock in the upper 20 inches
Distinctive present vegetation: Black sagebrush, low sagebrush, Idaho fescue

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Robson soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Wiskan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Robson Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Roadfill: Poor—depth to rock, large stones, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones, thin layer

Ratings of the Wiskan Soil for Selected Uses
Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Robson soil—VIIs, nonirrigated; Wiskan soil—VIIe, nonirrigated
Range site: Robson soil—024X018N; Wiskan soil—024X031N

3152—Robson-Reluctan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,200 to 7,500 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Robson cobbly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—50 percent
• Reluctan very cobbly loam, 15 to 30 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—35 percent
Contrasting inclusions:
• Inclusion 1: Cumulic Haploxerolls, 2 to 8 percent slopes—Cumulic Haploxerolls, fine-loamy, mixed, frigid—7 percent
• Inclusion 2: Xerollic Haplargids, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—6 percent
• Inclusion 3: Lithic Xerollic Haplargids, 2 to 8 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Robson Soil

Position on landscape: Crests and shoulders of mountains
Parent material: Kind—residuum; source—silicious rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, small rabbitbrush

Typical Profile

0 to 7 inches—cobbly loam; 15 to 45 percent cobbles

and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SC, CL-ML, CL; estimated AASHTO classification—A-4, A-6

7 to 19 inches—very cobbly clay, extremely cobbly clay; 50 to 80 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-7

19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 0.9 to 1.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Reluctan Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—rhyolitic tuff
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Idaho fescue

Typical Profile

0 to 8 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 40 to 55 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4, A-2

8 to 33 inches—gravelly clay loam, gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

33 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 4.0 to 5.2 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, narrow drainageways of mountains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 2
Position on landscape: Slightly concave, south-facing side slopes of mountains
Contrasting features: Slopes of 30 to 50 percent
Distinctive present vegetation: Wyoming big sagebrush, bluebunch wheatgrass

Inclusion 3
Position on landscape: Upper, south-facing side slopes of mountains
Contrasting features: Layer of lime accumulation at a depth of 8 to 16 inches
Distinctive present vegetation: Black sagebrush, bluebunch wheatgrass, bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Robson soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Robson Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to rock, large stones, slope

Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Roadfill: Poor—depth to rock, large stones, slope
Sand: Improbable source—large stones, excess fines
Gravel: Improbable source—large stones, excess fines
Topsoil: Poor—depth to rock, large stones, too clayey
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Reluctan Soil for Selected Uses

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Robson soil—VIIe, nonirrigated; Reluctan soil—VIIs, nonirrigated
Range site: Robson soil—024X018N; Reluctan soil—024X021N

3156—Robson-Old Camp-Rock outcrop association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,900 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Robson extremely cobbly loam, 8 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—50 percent
• Old Camp very cobbly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—20 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Roca extremely stony sandy loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—8 percent
• Inclusion 2: Robson extremely cobbly loam, 15 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 3: Typic Haploxerolls, 2 to 8 percent slopes—Typic Haploxerolls, fine-loamy, mixed, mesic—2 percent

Characteristics of the Robson Soil

Position on landscape: Crests and upper side slopes of foothills
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, small rabbitbrush

Typical Profile

0 to 10 inches—extremely cobbly loam; 40 to 55 percent cobbles and stones or 65 to 80 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2
10 to 14 inches—very cobbly clay loam; 30 to 45 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-7
14 to 19 inches—very cobbly clay, extremely cobbly clay; 50 to 80 percent cobbles and stones or 35 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 0.9 to 1.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Old Camp Soil

Position on landscape: Lower side slopes of foothills
Parent material: Kind—residuum influenced by loess; source—andesite
Slope features: Length—short; shape—concave
Dominant present vegetation: Wyoming big sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile

0 to 2 inches—very cobbly loam; 25 to 55 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM, GM-GC, SM-SC; estimated AASHTO classification—A-4, A-2
2 to 14 inches—very stony loam, very cobbly clay loam; 35 to 50 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.5 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Rock outcrop

Position on landscape: Scattered peaks and cliffs of foothills
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, south-facing, upper side slopes of foothills
Contrasting features: Bedrock at a depth of 20 to 40 inches
Distinctive present vegetation: Bluebunch wheatgrass, Wyoming big sagebrush

Inclusion 2
Position on landscape: Convex, north-facing, upper side slopes of foothills
Contrasting features: Slopes of 15 to 50 percent
Distinctive present vegetation: Low sagebrush, bluegrass

Inclusion 3
Position on landscape: Concave drainageways of foothills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Robson soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Robson Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to rock, large stones
Shallow excavations: Severe—depth to rock, large stones
Local roads and streets: Severe—depth to rock, large stones
Roadfill: Poor—depth to rock, large stones
Sand: Improbable source—large stones, excess fines
Gravel: Improbable source—large stones, excess fines
Topsoil: Poor—depth to rock, small stones
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope, large stones
Local roads and streets: Severe—depth to rock, slope, large stones
Roadfill: Poor—depth to rock, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Robson soil—VIIs, nonirrigated;

Old Camp soil—VIIs, nonirrigated; Rock outcrop soil—VIIIs
Range site: Robson soil—024X018N; Old Camp soil—024X005N

3203—Dewar-Sodhouse-Bojo association

Map Unit Setting

Position on landscape: Plateaus and mountain valley fans
Elevation: 5,800 to 6,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Dewar very gravelly loam, 2 to 8 percent slopes—Xerollic Durargids, loamy, mixed, mesic, shallow—40 percent
• Sodhouse gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Durorthids, loamy, mixed, mesic, shallow—30 percent
• Bojo gravelly loam, 15 to 50 percent, rubbly—Lithic Haplargids, loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—5 percent
• Inclusion 2: Lithic Haplargids, 30 to 50 percent slopes—Lithic Haplargids, clayey-skeletal, montmorillonitic, mesic—5 percent

Characteristics of the Dewar Soil

Position on landscape: Upper summits of mountain valley fan remnants
Parent material: Loess over silty alluvium
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile

0 to 4 inches—very gravelly loam; 50 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
4 to 14 inches—gravelly silty clay loam, gravelly clay loam; 0 to 10 percent cobbles and stones and 20 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC; estimated AASHTO classification—A-6, A-7
14 to 50 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 13 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 1.9 to 2.3 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Sodhouse Soil

Position on landscape: Lower summits of mountain valley fan remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 3 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4, A-2
3 to 17 inches—fine sandy loam, loam, very fine sandy loam; 10 to 25 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 20); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
17 to 29 inches—indurated duripan; massive
29 to 60 inches or more—extremely gravelly sandy loam, very gravelly loamy sand; 5 to 20 percent cobbles and stones and 50 to 85 percent pebbles (by weight); massive; very hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderate
Available water capacity: 2.1 to 2.6 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—4
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Bojo Soil

Position on landscape: Side slopes of plateaus
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Wyoming big sagebrush, shadscale, bluegrass, bottlebrush squirreltail

Typical Profile

0 to 4 inches—gravelly loam; 25 to 40 percent cobbles and stones and 20 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—-A-4
4 to 10 inches—sandy clay loam, clay loam; subangular blocky structure; hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-6
10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 14 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.5 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Rimrock on shoulders of plateaus
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Scarp side slopes of plateaus
Contrasting features: Bedrock at a depth of 14 to 20 inches
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Dewar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Sodhouse soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Bojo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Dewar Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping

Ratings of the Sodhouse Soil for Selected Uses
Range seeding: Poor—too arid, droughty, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, area reclaim

Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—seepage

Ratings of the Bojo Soil for Selected Uses
Range seeding: Poor—too arid, droughty, depth to rock
Daily cover for landfill: Severe—depth to rock, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Dewar soil—VIIs, nonirrigated; Sodhouse soil—VIIs, nonirrigated; Bojo soil—VIIs, nonirrigated
Range site: Dewar soil—024X005N; Sodhouse soil—024X002N; Bojo soil—024X020N

3410—Zoesta-Wieland-Akerue association

Map Unit Setting

Position on landscape: Foothills and interhill fans
Elevation: 5,800 to 7,600 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 95 days

Composition

Major components:
• Zoesta cobbly loam, 8 to 15 percent slopes—Xerollic Paleargids, fine, montmorillonitic, frigid—40 percent
• Wieland gravelly loam, 8 to 15 percent slopes—Durixerollic Haplargids, fine, montmorillonitic, mesic—30 percent
• Akerue gravelly loam, 4 to 8 percent slopes—Xerollic Durargids, clayey-skeletal, montmorillonitic, frigid, shallow—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 15 to 30 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—7 percent
• Inclusion 2: Xerollic Durargids, 4 to 8 percent slopes—Xerollic Durargids, clayey-skeletal, montmorillonitic, mesic—6 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Zoesta Soil

Position on landscape: North-facing side slopes of interhill fan remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, downy rabbitbrush

Typical Profile

0 to 7 inches—cobbly loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
7 to 23 inches—clay; 0 to 10 percent cobbles and stones and 5 to 15 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
23 to 31 inches—gravelly clay loam, gravelly clay; 30 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
31 to 60 inches—very gravelly clay loam, very gravelly loam; 55 to 70 percent pebbles (by weight); massive; very hard, very firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Very slow
Available water capacity: 7.9 to 9.1 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Wieland Soil

Position on landscape: South-facing side slopes of interhill fan remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—slightly concave

Dominant present vegetation: Wyoming big sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile

0 to 8 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL, SC; estimated AASHTO classification—A-6

8 to 20 inches—gravelly clay, clay; 0 to 5 percent cobbles and stones and 10 to 45 percent pebbles (by weight); prismatic structure; hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CH, SC; estimated AASHTO classification—A-7

20 to 60 inches or more—loam, gravelly loam, gravelly sandy loam; 0 to 5 percent cobbles and stones and 10 to 45 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4, A-2

Soil and Water Features

Depth to perched water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 5.7 to 9.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Akerue Soil

Position on landscape: Crests and shoulders of foothills
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC, SC, SM-SC; estimated AASHTO classification—A-4, A-6

3 to 15 inches—very cobbly clay, very cobbly clay loam; 30 to 50 percent cobbles and stones and 25 to 45 percent pebbles (by weight); angular blocky structure; hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL, SC; estimated AASHTO classification—A-7

15 to 21 inches—indurated duripan; massive; extremely hard, extremely firm

21 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 15 to 26 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 1.0 to 1.6 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, south-facing side slopes of foothills
Contrasting features: Bedrock at a depth of 20 to 40 inches
Distinctive present vegetation: Wyoming big sagebrush, bluebunch wheatgrass

Inclusion 2
Position on landscape: Smooth summits of interhill fan remnants
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, bluegrass, Thurber needlegrass

Inclusion 3
Position on landscape: Scattered peaks of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Zoesta soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Wieland soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Akerue soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Zoesta Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Fair—shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Ratings of the Wieland Soil for Selected Uses
Range seeding: Fair—too arid, droughty, small stones
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer

Ratings of the Akerue Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to rock, large stones
Shallow excavations: Severe—cemented pan, depth to rock
Local roads and streets: Severe—depth to rock
Roadfill: Poor—depth to rock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, too clayey
Pond reservoir areas: Severe—depth to rock, cemented pan
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Zoesta soil—VIIs, nonirrigated; Wieland soil—VIs, nonirrigated; Akerue soil—VIs, nonirrigated
Range site: Zoesta soil—024X018N; Wieland soil—024X005N; Akerue soil—024X030N

3413—Zoesta-Reluctan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,200 to 7,200 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 85 days

Composition

Major components:
• Zoesta cobbly loam, 30 to 50 percent slopes—Xerollic Paleargids, fine, montmorillonitic, frigid—60 percent
• Reluctan gravelly loam, 8 to 15 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—9 percent
• Inclusion 2: Aridic Argixerolls, 8 to 15 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 3: Rock outcrop—3 percent

Characteristics of the Zoesta Soil

Position on landscape: Side slopes of mountains
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, downy rabbitbrush

Typical Profile

0 to 7 inches—cobbly loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
7 to 23 inches—clay; 0 to 10 percent cobbles and stones and 5 to 15 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
23 to 31 inches—gravelly clay loam, gravelly clay; 30 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; moderately alkaline (pH 8.2);

nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

31 to 60 inches—very gravelly clay loam, very gravelly loam; 55 to 70 percent pebbles (by weight); massive; very hard, very firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Very slow
Available water capacity: 7.9 to 9.1 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Reluctan Soil

Position on landscape: Crests of mountains
Parent material: Kind—colluvium and residuum; source—rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluegrass, bluebunch wheatgrass, serviceberry

Typical Profile

0 to 13 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4

13 to 38 inches—gravelly clay loam, gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

38 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 4.0 to 5.2 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave, south-facing side slopes of mountains
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Bluebunch wheatgrass, mountain big sagebrush

Inclusion 2
Position on landscape: Concave, north-facing side slopes of mountains
Contrasting features: Very gravelly texture in the upper part of the subsoil
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue

Inclusion 3
Position on landscape: Scattered peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Zoesta soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good

Ratings of the Zoesta Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope

Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Ratings of the Reluctan Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Moderate—depth to rock, shrink-swell, slope
Roadfill: Poor—depth to rock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Zoesta soil—VIIs, nonirrigated; Reluctan soil—VIIs, nonirrigated
Range site: Zoesta soil—024X018N; Reluctan soil—024X021N

3415—Zoesta-Handy association

Map Unit Setting

Position on landscape: Mountain valley fans
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 95 days

Composition

Major components:
• Zoesta cobbly loam, 8 to 15 percent slopes—Xerollic Paleargids, fine, montmorillonitic, frigid—50 percent
• Handy gravelly loam, 15 to 30 percent slopes, very stony—Xerollic Haplargids, fine, montmorillonitic, frigid—35 percent
Contrasting inclusions:
• Inclusion 1: Aridic Duric Haploxerolls, 15 to 30 percent slopes—Aridic Duric Haploxerolls, loamy-skeletal, mixed, frigid—6 percent
• Inclusion 2: Aridic Haploxerolls, 4 to 15 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Durixerollic Haplargids, 15 to 30 percent slopes—Durixerollic Haplargids, fine, montmorillonitic, frigid—4 percent

Characteristics of the Zoesta Soil

Position on landscape: Lower part of mountain valley fan remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, downy rabbitbrush

Typical Profile

0 to 7 inches—cobbly loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
7 to 23 inches—clay; 0 to 10 percent cobbles and stones and 5 to 15 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
23 to 31 inches—gravelly clay loam, gravelly clay; 30 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
31 to 60 inches—very gravelly clay loam, very gravelly loam; 55 to 70 percent pebbles (by weight); massive; very hard, very firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Very slow
Available water capacity: 7.9 to 9.1 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Handy Soil

Position on landscape: Upper part of mountain valley fan remnants
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluegrass, rabbitbrush

Rock fragments on surface: Kind—stones; percentage of surface covered—1 to 3

Typical Profile

0 to 4 inches—gravelly loam; 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, GM-GC, SC, GC; estimated AASHTO classification—A-4, A-6

4 to 30 inches—gravelly clay, clay; 0 to 5 percent cobbles and stones and 0 to 30 percent pebbles (by weight); prismatic structure; very hard, very firm; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

30 to 60 inches or more—gravelly loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: In the upper 30 inches—slow; below this depth—moderately rapid
Available water capacity: 5.9 to 7.6 inches
Water-supplying capacity: 11 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex remnants of inset fans
Contrasting features: Very gravelly loam throughout the profile
Distinctive present vegetation: Mountain big sagebrush, bluegrass

Inclusion 2
Position on landscape: Concave inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 3
Position on landscape: Convex side slopes of mountain valley fan remnants
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Low sagebrush, bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Zoesta soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Handy soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Zoesta Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Fair—shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Ratings of the Handy Soil for Selected Uses
Range seeding: Fair—too arid, large stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Fair—slope, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Interpretive Groups

Capability classification: Zoesta soil—VIIs, nonirrigated; Handy soil—VIIs, nonirrigated
Range site: Zoesta soil—024X018N; Handy soil—025X014N

3417—Zoesta-Loncan-Welch association

Map Unit Setting

Position on landscape: Mountains and mountain valley fans

Elevation: 6,400 to 7,400 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Zoesta cobbly loam, 2 to 8 percent slopes—Xerollic Paleargids, fine, montmorillonitic, frigid—45 percent
• Loncan gravelly silt loam, 4 to 15 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—20 percent
• Welch silt loam, drained, 2 to 8 percent slopes, rarely flooded—Cumulic Haplaquolls, fine-loamy, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Welch silt loam, 0 to 2 percent slopes, occasionally flooded—Cumulic Haplaquolls, fine-loamy, mixed, frigid—10 percent
• Inclusion 2: Loncan extremely gravelly loam, 15 to 30 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent
• Inclusion 3: Aridic Haploxerolls, 8 to 15 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent
• Inclusion 4: Welch silt loam, frequently flooded, 0 to 2 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed, frigid—1 percent

Characteristics of the Zoesta Soil

Position on landscape: Mountain valley fan remnants bordering the mountain front
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, downy rabbitbrush

Typical Profile

0 to 7 inches—cobbly loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
7 to 23 inches—clay; 0 to 10 percent cobbles and stones and 5 to 15 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
23 to 31 inches—gravelly clay loam, gravelly clay; 30 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
31 to 60 inches—very gravelly clay loam, very gravelly loam; 55 to 70 percent pebbles (by weight); massive; very hard, very firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Very slow
Available water capacity: 7.9 to 9.1 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Loncan Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum; source—various kinds of rock
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Mountain big sagebrush, Idaho fescue, bluebunch wheatgrass

Typical Profile

0 to 14 inches—gravelly silt loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6
14 to 31 inches—very gravelly loam, extremely cobbly loam, very gravelly sandy clay loam; 10 to 45 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
31 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 21 to 38 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderate
Available water capacity: 2.3 to 3.8 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Welch Soil

Position on landscape: Inset fan remnants in narrow mountain valleys
Parent material: Mixed alluvium
Slope features: Length—short; shape—slightly concave

Typical Profile

0 to 4 inches—silt loam; 0 to 5 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4

4 to 60 inches—stratified sandy loam to silty clay loam; 0 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: March to June—48 to 72 inches; rest of year—below 72 inches
Hazard of flooding: Rare
Permeability: Moderately slow
Available water capacity: 9.6 to 12 inches
Water-supplying capacity: 13 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Outer margins of flood plains along inset fans in narrow mountain valleys
Contrasting features: Occasionally flooded
Distinctive present vegetation: Basin big sagebrush, Nevada bluegrass, basin wildrye

Inclusion 2
Position on landscape: Upper side slopes of mountains
Contrasting features: Extremely gravelly surface layer
Distinctive present vegetation: Mountain big sagebrush, bluebunch wheatgrass

Inclusion 3
Position on landscape: Foot slopes of mountains
Contrasting features: Very deep, well drained soil that lacks layer of clay accumulation

Inclusion 4
Position on landscape: Flood plains along inset fans in narrow mountain valleys
Contrasting features: Frequently flooded
Distinctive present vegetation: Bluegrass, tufted hairgrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Zoesta soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Loncan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Welch soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good

Ratings of the Zoesta Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Fair—shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Slight

Ratings of the Loncan Soil for Selected Uses
Range seeding: Fair—too arid, droughty
Daily cover for landfill: Poor—depth to rock, small stones

Shallow excavations: Depth to rock
Local roads and streets: Moderate—slope, depth to rock, frost action
Roadfill: Poor—depth to rock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer, large stones

Ratings of the Welch Soil for Selected Uses

Range seeding: Good
Daily cover for landfill: Fair—too clayey
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Slight

Interpretive Groups

Capability classification: Zoesta soil—VIIs, nonirrigated; Loncan soil—VIIs, nonirrigated; Welch soil—VIw, nonirrigated
Range site: Zoesta soil—024X018N; Loncan soil—024X021N; Welch soil—025X003N

3420—Belate-Sumine-Softscrabble association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Belate gravelly loam, 50 to 75 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—40 percent
• Sumine very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—25 percent
• Softscrabble very cobbly loam, 30 to 50 percent slopes—Pachic Argixerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Lithic Haploxerolls, 0 to 4 percent slopes—Lithic Haploxerolls, loamy-skeletal, mixed, frigid—8 percent
• Inclusion 2: Rubble land—4 percent
• Inclusion 3: Rock outcrop—3 percent

Characteristics of the Belate Soil

Position on landscape: North-facing, upper side slopes of mountains
Parent material: Kind—colluvium; source—rhyolitic tuff, andesite
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Idaho fescue

Typical Profile

0 to 14 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
14 to 60 inches or more—very gravelly loam, very gravelly clay loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 6.9 to 8.6 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Sumine Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—andesite
Slope features: Length—short; shape—smooth
Dominant present vegetation: Bluebunch wheatgrass, mountain big sagebrush

Typical Profile

0 to 10 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 40 to 55 percent pebbles (by weight); granular structure; soft, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4

10 to 30 inches—very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7

30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderate
Available water capacity: 2.8 to 4.1 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Softscrabble Soil

Position on landscape: North-facing, lower side slopes of mountains
Parent material: Kind—residuum and colluvium; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Idaho fescue, mountain big sagebrush, serviceberry

Typical Profile

0 to 16 inches—very cobbly loam; 40 to 50 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4

16 to 30 inches—very cobbly clay loam; 30 to 45 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7

30 to 60 inches or more—very gravelly clay loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 6.0 to 7.8 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex crests of mountains
Contrasting features: Bedrock at a depth of less than 20 inches
Distinctive present vegetation: Low sagebrush, black sagebrush

Inclusion 2
Position on landscape: Side slopes of mountains below rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Scattered peaks and rimrock on side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Ratings of the Belate Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Softscrabble Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—slope, small stones
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Poor—slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Belate soil—VIIe, nonirrigated; Sumine soil—VIIs, nonirrigated; Softscrabble soil—VIIs, nonirrigated
Range site: Belate soil—024X027N; Sumine soil—024X029N; Softscrabble soil—024X021N

3423—Belate-Cleavage-Softscrabble association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 7,800 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 70 days

Composition

Major components:
• Belate very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—35 percent
• Cleavage extremely gravelly loam, 15 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—30 percent
• Softscrabble gravelly loam, 15 to 30 percent slopes—Pachic Argixerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Sumine very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—9 percent
• Inclusion 2: Rock outcrop—3 percent
• Inclusion 3: Welch loam, drained, 2 to 8 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed, frigid—2 percent
• Inclusion 4: Welch loam, 2 to 8 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed, frigid—1 percent

Characteristics of the Belate Soil

Position on landscape: Upper side slopes of mountains
Parent material: Kind—colluvium; source—rhyolitic tuff, andesite
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Idaho fescue

Typical Profile

0 to 14 inches—very gravelly loam; 5 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
14 to 60 inches or more—very gravelly loam, very gravelly clay loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 6.9 to 8.6 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight

Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Cleavage Soil

Position on landscape: Windswept crests and shoulders of mountains
Parent material: Kind—residuum; source—extrusive volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, black sagebrush, bluegrass

Typical Profile

0 to 4 inches—extremely gravelly loam; 0 to 10 percent cobbles and stones and 75 to 85 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
4 to 15 inches—very cobbly clay loam, extremely gravelly clay loam, very gravelly loam; 0 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
15 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 1.6 to 1.8 inches
Water-supplying capacity: 9 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Softscrabble Soil

Position on landscape: Mid and lower side slopes of mountains
Parent material: Kind—residuum and colluvium; source—volcanic rock
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, Idaho fescue, serviceberry

Typical Profile

0 to 9 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
9 to 30 inches—very cobbly clay loam; 30 to 45 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7
30 to 60 inches or more—gravelly clay loam; 5 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 6.1 to 8.2 inches
Water-supplying capacity: 14 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Plane to convex, south-facing side slopes of mountains
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Mountain big sagebrush, bluebunch wheatgrass
Inclusion 2
Position on landscape: Rimrock and cliffs on eroded side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Entrenched drainageways of mountains
Contrasting features: Somewhat poorly drained soil with slopes of 2 to 8 percent
Distinctive present vegetation: Basin big sagebrush, basin wildrye
Inclusion 4
Position on landscape: Narrow drainageways of mountains
Contrasting features: Poorly drained; slopes of 2 to 8 percent
Distinctive present vegetation: Tufted hairgrass, Nevada bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Belate soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Softscrabble soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Belate Soil for Selected Uses
Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Ratings of the Cleavage Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Roadfill: Poor—slope, depth to rock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Softscrabble Soil for Selected Uses
Range seeding: Fair—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Interpretive Groups

Capability classification: Belate soil—VIIs, nonirrigated; Cleavage soil—VIIs, nonirrigated; Softscrabble soil—VIe, nonirrigated
Range site: Belate soil—024X027N; Cleavage soil—024X016N; Softscrabble soil—024X021N

3432—Bregar-Roca-Quarz association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,200 to 7,600 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Bregar very cobbly loam, 50 to 75 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—35 percent
• Roca very gravelly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—30 percent
• Quarz extremely gravelly loam, 15 to 30 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Aridic Haploxerolls, 15 to 30 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—10 percent
• Inclusion 2: Lithic Xerollic Haplargids, 30 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—5 percent

Characteristics of the Bregar Soil

Position on landscape: East- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, low sagebrush, Idaho fescue

Typical Profile

0 to 4 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 55 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC, CL-ML, CL; estimated AASHTO classification—A-4, A-2, A-6

4 to 11 inches—very gravelly clay loam, extremely gravelly loam, extremely cobbly sandy clay loam; 0 to 40 percent cobbles and stones and 50 to 80 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 12 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 1.0 to 1.3 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Roca Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—chert and shale
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Bluebunch wheatgrass, mountain big sagebrush

Typical Profile

0 to 5 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

5 to 27 inches—very gravelly clay loam, very gravelly clay; 0 to 15 percent cobbles and stones and 50 to 60 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2

27 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Quarz Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—shale and sandstone
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, Thurber needlegrass, bluebunch wheatgrass

Typical Profile

0 to 7 inches—extremely gravelly loam; 0 to 15 percent cobbles and stones and 75 to 90 percent pebbles (by weight); granular structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GP-GC; estimated AASHTO classification—A-2

7 to 26 inches—very gravelly clay, very gravelly clay loam; 0 to 25 percent cobbles and stones and 50 to 75 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-7

26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 2.2 to 2.7 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, north-facing side slopes of mountains
Contrasting features: Layer of lime accumulation at a depth of 20 to 30 inches
Distinctive present vegetation: Black sagebrush, Idaho fescue

Inclusion 2
Position on landscape: Crests and shoulders of mountains
Contrasting features: Very gravelly clay subsoil
Distinctive present vegetation: Low sagebrush, Idaho fescue

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Bregar soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Quarz soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Bregar Soil for Selected Uses
Range seeding: Poor—droughty, large stones, depth to rock
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Roca Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—slope, depth to rock
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Quarz Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to rock, slope, small stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer, large stones

Interpretive Groups

Capability classification: Bregar soil—VIIs, nonirrigated; Roca soil—VIIs, nonirrigated; Quarz soil—VIIs, nonirrigated
Range site: Bregar soil—024X016N; Roca soil—025X015N; Quarz soil—025X014N

3433—Bregar-Punchbowl association

Map Unit Setting

Position on landscape: Foothills
Elevation: 6,500 to 6,900 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Bregar very gravelly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—45 percent
• Punchbowl gravelly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, frigid—40 percent
Contrasting inclusions:
• Inclusion 1: Bregar extremely cobbly loam, 4 to 15

percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Rock outcrop—4 percent
• Inclusion 3: Durixerollic Camborthids, 2 to 8 percent slopes—Durixerollic Camborthids, fine-loamy, mixed, frigid—3 percent
• Inclusion 4: Xerollic Haplargids, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—3 percent

Characteristics of the Bregar Soil

Position on landscape: Crests and shoulders of foothills
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, low sagebrush, Idaho fescue
Surface cover: 35 percent pebbles, 35 percent cobbles

Typical Profile

0 to 4 inches—very gravelly loam; 10 to 20 percent cobbles and stones and 45 to 60 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-4, A-2, A-6
4 to 11 inches—very gravelly clay loam, extremely cobbly clay loam, very gravelly sandy clay loam; 5 to 45 percent cobbles and stones and 65 to 75 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 12 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 1.0 to 1.3 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Punchbowl Soil

Position on landscape: Broad summits of foothills
Parent material: Kind—residuum; source—andesite, rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bluegrass, phlox, Utah juniper

Typical Profile

0 to 3 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4, A-2
3 to 6 inches—gravelly loam, loam; 0 to 5 percent cobbles and stones and 5 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC, CL, GC; estimated AASHTO classification—A-6
6 to 10 inches—gravelly clay loam, gravelly sandy clay loam; 0 to 5 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7
10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex upper side slopes of foothills
Contrasting features: Extremely cobbly soil surface
Distinctive present vegetation: Black sagebrush, low sagebrush, Idaho fescue

Inclusion 2
Position on landscape: Scattered peaks of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Concave drainageways of foothills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Big sagebrush, Thurber needlegrass, bluebunch wheatgrass
Inclusion 4
Position on landscape: Smooth, north-facing side slopes of foothills
Contrasting features: Deep soil with higher water-supplying capacity
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Bregar soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Punchbowl soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Bregar Soil for Selected Uses
Range seeding: Poor—droughty, small stones, depth to rock
Daily cover for landfill: Poor—small stones, depth to rock
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Roadfill: Poor—depth to rock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Punchbowl Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to rock, small stones
Shallow excavations: Severe—depth to rock
Local roads and streets: Severe—depth to rock
Roadfill: Poor—depth to rock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones
Pond reservoir areas: Severe—depth to rock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Bregar soil—VIIs, nonirrigated; Punchbowl soil—VIIs, nonirrigated
Range site: Bregar soil—024X016N; Punchbowl soil—024X030N

3451—Reluctan-Robson-Sumine association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,400 to 6,600 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Reluctan very cobbly loam, 15 to 30 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—40 percent
• Robson very cobbly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—25 percent
• Sumine very cobbly loam, 15 to 30 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Typic Argixerolls, 15 to 30 percent slopes—Typic Argixerolls, loamy-skeletal, mixed, frigid—7 percent
• Inclusion 2: Rock outcrop—3 percent
• Inclusion 3: Cumulic Haploxerolls, 2 to 8 percent slopes—Cumulic Haploxerolls, fine-loamy, mixed, frigid—3 percent
• Inclusion 4: Rubble land—2 percent

Characteristics of the Reluctan Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—rhyolitic tuff
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Mountain big sagebrush, Thurber needlegrass, Idaho fescue

Typical Profile

0 to 8 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 40 to 55 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.5); nonsaline (less than 2

mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4, A-2
8 to 33 inches—gravelly clay loam, gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
33 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 4.0 to 5.2 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Robson Soil

Position on landscape: Summits and shoulders of mountains
Parent material: Kind—residuum; source—silicious rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, small rabbitbrush

Typical Profile

0 to 10 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC, SM-SC, SC; estimated AASHTO classification—A-2
10 to 14 inches—very cobbly clay loam; 30 to 45 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-7
14 to 19 inches—very cobbly clay, extremely cobbly clay; 50 to 80 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 0.9 to 1.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Sumine Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—quartzite
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 10 inches—very cobbly loam; 30 to 55 percent cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly clay loam, very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderate
Available water capacity: 2.5 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Very rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave side slopes of mountains
Contrasting features: Receives additional moisture from drifted snow
Distinctive present vegetation: Mountain big sagebrush, snowberry, Idaho fescue
Inclusion 2
Position on landscape: Cliffs on eroded side slopes and scattered peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Inset fans along drainageways of mountains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye, Nevada bluegrass
Inclusion 4
Position on landscape: Rock stripes on side slopes of mountains below rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Robson soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Reluctan Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Robson Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Roadfill: Poor—depth to rock, large stones, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Reluctan soil—VIIs, nonirrigated; Robson soil—VIIs, nonirrigated; Sumine soil—VIIs, nonirrigated
Range site: Reluctan soil—024X021N; Robson soil—024X018N; Sumine soil—024X029N

3452—Reluctan-Sumine-Colbar association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,400 to 6,600 feet
Average annual precipitation: About 12 inches

Average annual air temperature: About 46 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Reluctan cobbly loam, 15 to 30 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—45 percent
• Sumine very cobbly loam, 15 to 30 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—25 percent
• Colbar very cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 2: Aridic Haploxerolls, 4 to 15 percent slopes—Aridic Haploxerolls, fine-loamy, mixed, frigid—5 percent

Characteristics of the Reluctan Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—rhyolitic tuff
Slope features: Length—short; shape—smooth to slightly concave
Dominant present vegetation: Mountain big sagebrush, Thurber needlegrass, Idaho fescue

Typical Profile

0 to 8 inches—cobbly loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
8 to 33 inches—gravelly clay loam, gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
33 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 4.0 to 5.2 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Sumine Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—breccia
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 10 inches—very cobbly loam; 30 to 55 percent cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly clay loam, very gravelly loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderate
Available water capacity: 2.5 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Very rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Colbar Soil

Position on landscape: Lower side slopes of mountains
Parent material: Kind—colluvium; residuum over source—rhyolitic tuff
Slope features: Length—short; shape—concave
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass, bluegrass

Typical Profile

0 to 3 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Upper side slopes of mountains
Contrasting features: Clayey subsoil
Distinctive present vegetation: Singleleaf pinyon, Utah juniper

Inclusion 2
Position on landscape: Fanlettes at the base of mountains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Reluctan Soil for Selected Uses
Range seeding: Fair—large stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Sumine Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Colbar Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to rock, slope, large stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope

Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Reluctan soil—VIIs, nonirrigated; Sumine soil—VIIs, nonirrigated; Colbar soil—VIIs, nonirrigated
Range site: Reluctan soil—024X021N; Sumine soil—024X029N; Colbar soil—024X005N

3453—Reluctan-Locane-Itca association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 7,600 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Reluctan very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—35 percent
• Locane extremely gravelly sandy loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—25 percent
• Itca very cobbly loam, 15 to 30 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Softscrabble gravelly loam, 15 to 30 percent slopes—Pachic Argixerolls, loamy-skeletal, mixed, frigid—7 percent
• Inclusion 2: Xerollic Haplargids, 15 to 30 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 3: Welch loam, drained, 2 to 8 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed, frigid—2 percent
• Inclusion 4: Rock outcrop—1 percent

Characteristics of the Reluctan Soil

Position on landscape: North-, west-, and east-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—rhyolitic tuff
Slope features: Length—short; shape—smooth, slightly concave
Dominant present vegetation: Mountain big sagebrush, Thurber needlegrass, Idaho fescue

Typical Profile

0 to 8 inches—very gravelly loam; 10 to 25 percent cobbles and stones and 45 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4, A-2
8 to 33 inches—gravelly clay loam, gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
33 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 4.0 to 5.2 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Locane Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—tuffaceous conglomerate
Slope features: Length—short; shape—convex
Dominant present vegetation: Big sagebrush, Thurber needlegrass, bluebunch wheatgrass, singleleaf pinyon

Typical Profile

0 to 6 inches—extremely gravelly sandy loam; 5 to 20 percent cobbles and stones and 75 to 85 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2

6 to 14 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Itca Soil

Position on landscape: Crests, shoulders, and upper side slopes of mountains and areas adjacent to rock outcrop
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, Idaho fescue, Utah juniper

Typical Profile

0 to 9 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; soft, very friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-4, A-6
9 to 17 inches—very cobbly clay loam, very gravelly clay, extremely gravelly clay; 0 to 55 percent cobbles and stones and 25 to 70 percent pebbles (by weight); prismatic structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC; estimated AASHTO classification—A-2, A-7
17 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 1.7 to 2.2 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing back slopes of mountains
Contrasting features: Receives additional moisture from drifted snow
Distinctive present vegetation: Serviceberry, mountain big sagebrush, mountain brome
Inclusion 2
Position on landscape: Convex lower side slopes of mountains
Contrasting features: Clayey subsoil with bedrock at a depth of 20 to 40 inches
Distinctive present vegetation: Low sagebrush, Thurber needlegrass
Inclusion 3
Position on landscape: Concave inset fans along drainageways of mountains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush
Inclusion 4
Position on landscape: Scattered peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat, woodland

Woodland on the Itca soil:
Site index for common trees: Singleleaf pinyon—70

Wildlife habitat elements:
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Suitability of the Locane soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Itca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Reluctan Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Locane Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Itca Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to rock, small stones, too clayey
Shallow excavations: Severe—slope, depth to rock, large stones
Local roads and streets: Severe—slope, depth to rock, large stones
Roadfill: Poor—depth to rock, slope, large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too clayey, depth to rock, small stones
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer, large stones

Interpretive Groups

Capability classification: Reluctan soil—VIIs, nonirrigated; Locane soil—VIIs, nonirrigated; Itca soil—VIIs, nonirrigated
Range site: Reluctan soil—024X021N; Locane soil—024X035N; Itca soil—025X061N
Woodland suitability group: Itca soil—2D

3455—Reluctan-Roca-Colbar association

Map Unit Setting

Position on landscape: Mountains and foothills
Elevation: 5,400 to 6,400 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 95 days

Composition

Major components:
• Reluctan very cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—40 percent
• Roca very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—30 percent
• Colbar cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—7 percent
• Inclusion 2: Pachic Haploxerolls, 30 to 50 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 3: Lithic Xeric Torriorthents, 8 to 30 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—3 percent
• Inclusion 4: Lithic Xerollic Haplargids, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Reluctan Soil

Position on landscape: North-facing side slopes of mountains and foothills
Parent material: Kind—colluvium and residuum; source—rhyolitic tuff
Slope features: Length—short; shape—smooth to slightly concave
Dominant present vegetation: Mountain big sagebrush, Thurber needlegrass, Idaho fescue

Typical Profile

0 to 8 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 40 to 55 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4, A-2

8 to 33 inches—gravelly clay loam, gravelly loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
33 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 4.0 to 5.2 inches
Water-supplying capacity: 12 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Roca Soil

Position on landscape: South-facing side slopes of mountains and foothills
Parent material: Kind—residuum; source—chert
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Wyoming big sagebrush

Typical Profile

0 to 5 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 15 to 25 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
5 to 27 inches—very gravelly clay loam, very gravelly clay; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
27 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Colbar Soil

Position on landscape: Lower side slopes of foothills
Parent material: Kind—colluvium over residuum; source—rhyolitic tuff
Slope features: Length—short; shape—concave
Dominant present vegetation: Wyoming big sagebrush, bluebunch wheatgrass, bluegrass

Typical Profile

0 to 3 inches—cobbly loam; 35 to 45 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid

Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Crests and shoulders of mountains and foothills
Contrasting features: Bedrock at a depth of 10 to 20 inches
Distinctive present vegetation: Black sagebrush, bluebunch wheatgrass, bluegrass
Inclusion 2
Position on landscape: Concave snow pockets on north-facing side slopes of mountains and foothills
Contrasting features: Receives additional moisture from drifted snow
Distinctive present vegetation: Snowberry, mountain big sagebrush, Idaho fescue
Inclusion 3
Position on landscape: Lower, eroded side slopes of mountains and foothills
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Wyoming big sagebrush, small rabbitbrush
Inclusion 4
Position on landscape: Scattered peaks
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Reluctan Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Roca Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—slope, depth to rock
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Colbar Soil for Selected Uses
Range seeding: Fair—droughty, large stones
Daily cover for landfill: Poor—depth to rock, slope, large stones
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Reluctan soil—VIIs, nonirrigated; Roca soil—VIIs, nonirrigated; Colbar soil—VIe, nonirrigated
Range site: Reluctan soil—024X021N; Roca soil—024X028N; Colbar soil—024X005N

3560—Locane-Robson-Bregar association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,400 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Locane very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—45 percent

• Robson gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—25 percent
• Bregar extremely gravelly loam, 15 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Aridic Duric Haploxerolls, 30 to 75 percent slopes—Aridic Duric Haploxerolls, loamy-skeletal, mixed, frigid—6 percent
• Inclusion 2: Glean silt loam, 30 to 75 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Rock outcrop—3 percent
• Inclusion 4: Xerollic Camborthids, 30 to 50 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, frigid—1 percent

Characteristics of the Locane Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—tuffaceous conglomerate
Slope features: Length—short; shape—convex
Dominant present vegetation: Big sagebrush, Thurber needlegrass, bluebunch wheatgrass

Typical Profile

0 to 6 inches—very gravelly loam; 5 to 15 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
6 to 14 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Robson Soil

Position on landscape: Predominately north-facing side slopes of mountains
Parent material: Kind—residuum; source—silicious rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, small rabbitbrush

Typical Profile

0 to 7 inches—gravelly loam; 5 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SC, CL-ML, CL; estimated AASHTO classification—A-4, A-6
7 to 19 inches—very cobbly clay, extremely cobbly clay; 50 to 80 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 0.9 to 1.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Bregar Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, low sagebrush, Idaho fescue

Typical Profile

0 to 4 inches—extremely gravelly loam; 10 to 20 percent cobbles and stones and 70 to 80 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

4 to 11 inches—very gravelly clay loam, extremely cobbly clay loam, very gravelly sandy clay loam; 5 to 45 percent cobbles and stones and 65 to 75 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 12 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately slow
Available water capacity: 1.0 to 1.3 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave snow pockets on north-facing side slopes of mountains
Contrasting features: Receives additional moisture from drifted snow
Distinctive present vegetation: Snowberry, mountain big sagebrush, Idaho fescue

Inclusion 2
Position on landscape: Concave lower side slopes of mountains
Contrasting features: Bedrock at a depth of more than 40 inches
Distinctive present vegetation: Mountain big sagebrush, bluebunch wheatgrass

Inclusion 3
Position on landscape: Scattered peaks
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 4
Position on landscape: Lower, south-facing side slopes of mountains
Contrasting features: Lacks layer of clay accumulation; higher water-supplying capacity
Distinctive present vegetation: Black sagebrush, bluebunch wheatgrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Locane soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Robson soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bregar soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Locane Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Robson Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to rock, large stones, slope
Shallow excavations: Severe—depth to rock, large stones, slope
Local roads and streets: Severe—depth to rock, large stones, slope
Roadfill: Poor—depth to rock, large stones, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—large stones, thin layer

Ratings of the Bregar Soil for Selected Uses
Range seeding: Poor—droughty, small stones, depth to rock
Daily cover for landfill: Poor—depth to rock, slope

Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Locane soil—VIIs, nonirrigated; Robson soil—VIIe, nonirrigated; Bregar soil—VIIs, nonirrigated
Range site: Locane soil—024X035N; Robson soil—024X018N; Bregar soil—024X016N

3561—Locane-Sumine-Glean association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,300 to 7,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Locane very gravelly loam, 30 to 50 percent slopes, eroded—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—35 percent
• Sumine gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—30 percent
• Glean gravelly silt loam, 30 to 50 percent slopes—Pachic Haploxerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—8 percent
• Inclusion 2: Bregar extremely gravelly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—4 percent
• Inclusion 3: Vanwyper gravelly silt loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—2 percent
• Inclusion 4: Cumulic Haploxerolls, 2 to 4 percent slopes—Cumulic Haploxerolls, loamy-skeletal, mixed, frigid—1 percent

Characteristics of the Locane Soil

Position on landscape: West- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—silicious conglomerate
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper, Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 6 inches—very gravelly loam; 5 to 15 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
6 to 14 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Sumine Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—quartzite, breccia, and sandstone
Slope features: Length—short; shape—plane to convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 10 inches—gravelly loam; 25 to 50 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4
10 to 30 inches—very gravelly clay loam, very gravelly loam, very cobbly clay loam; 15 to 40 percent

cobbles and stones and 35 to 65 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7

30 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderate
Available water capacity: 2.5 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Glean Soil

Position on landscape: North-facing snow pockets and back slopes of mountains
Parent material: Kind—gravelly colluvium over residuum; source—various kinds of rock
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Mountain big sagebrush, snowberry, lanceleaf rabbitbrush, Idaho fescue, bluegrass

Typical Profile

0 to 6 inches—gravelly silt loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, GM, ML; estimated AASHTO classification—A-4

6 to 49 inches—very gravelly loam, very gravelly sandy loam; 0 to 25 percent cobbles and stones and 40 to 75 percent pebbles (by weight); massive; soft, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

49 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.1 to 5.0 inches
Water-supplying capacity: 12 inches
Runoff: Very rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—3; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Scattered peaks
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 2
Position on landscape: South-facing shoulders and upper side slopes of mountains
Contrasting features: Bedrock at a depth of less than 20 inches, lower water-supplying capacity
Distinctive present vegetation: Low sagebrush, black sagebrush, Idaho fescue

Inclusion 3
Position on landscape: North-facing, lower side slopes of mountains
Contrasting features: Moderately deep to hard bedrock, very gravelly clay subsoil
Distinctive present vegetation: Bluebunch wheatgrass, mountain big sagebrush

Inclusion 4
Position on landscape: Narrow drainageways of mountains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Locane soil:
Site index for common trees: Singleleaf pinyon—22; Utah juniper—22
Most important understory plants: Wyoming big sagebrush, bluebunch wheatgrass

Wildlife habitat elements:
Suitability of the Locane soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous

plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Suitability of the Glean soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good

Ratings of the Locane Soil for Selected Uses

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Sumine Soil for Selected Uses

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Glean Soil for Selected Uses

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Locane soil—VIIs, nonirrigated; Sumine soil—VIIe, nonirrigated; Glean soil—VIIe, nonirrigated
Range site: Locane soil—025X062N; Sumine soil—024X029N; Glean soil—024X023N
Woodland suitability group: Locane soil—1R

3564—Locane-Zoesta-Bucan association

Map Unit Setting

Position on landscape: Mountains and foothills
Elevation: 6,000 to 6,900 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Locane very gravelly fine sandy loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—35 percent
• Zoesta cobbly loam, 15 to 30 percent slopes—Xerollic Paleargids, fine, montmorillonitic, frigid—30 percent
• Bucan cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids, 4 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—8 percent
• Inclusion 2: Aridic Argixerolls, 15 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—4 percent
• Inclusion 3: Fluventic Haploxerolls, 4 to 15 percent slopes—Fluventic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent
• Inclusion 4: Rock outcrop—1 percent

Characteristics of the Locane Soil

Position on landscape: Broad, lower side slopes of foothills and mountains
Parent material: Kind—residuum; source—interbedded shale and conglomerate
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very gravelly fine sandy loam; 5 to 15 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

6 to 14 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified

classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Zoesta Soil

Position on landscape: Broad, north- and east-facing side slopes of foothills and mountains
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, downy rabbitbrush

Typical Profile

0 to 7 inches—cobbly loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
7 to 23 inches—clay; 0 to 10 percent cobbles and stones and 5 to 15 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
23 to 31 inches—gravelly clay loam, gravelly clay; 30 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
31 to 60 inches—very gravelly clay loam, very gravelly loam; 55 to 70 percent pebbles (by weight); massive; very hard, very firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Hazard of flooding: None
Permeability: Very slow
Available water capacity: 7.9 to 9.1 inches
Water-supplying capacity: 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Bucan Soil

Position on landscape: South-facing side slopes of foothills and mountains
Parent material: Kind—residuum capped with loess influenced by volcanic ash; source—volcanic rock
Slope features: Length—long; shape—concave
Dominant present vegetation: Thurber needlegrass, Wyoming big sagebrush, bluebunch wheatgrass

Typical Profile

0 to 5 inches—cobbly loam; 20 to 25 percent cobbles and stones and 20 to 30 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
5 to 30 inches—clay; 0 to 10 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; very hard, very firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CH; estimated AASHTO classification—A-7
30 to 52 inches—clay loam, gravelly clay loam, gravelly clay; 10 to 30 percent cobbles and stones and 15 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-7
52 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 40 to 60 inches
Depth to seasonal high water table: More than 60 inches

Hazard of flooding: None
Permeability: Slow
Available water capacity: 7.2 to 8.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—3; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex lower summits and north-facing shoulders of mountains and foothills
Contrasting features: Layer of lime accumulation in subsoil
Distinctive present vegetation: Black sagebrush, bluegrass
Inclusion 2
Position on landscape: Concave back slopes of mountains
Contrasting features: Very deep
Distinctive present vegetation: Wyoming big sagebrush, mountain big sagebrush, bluegrass, and bluebunch wheatgrass
Inclusion 3
Position on landscape: Concave drainageways of mountains and foothills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye
Inclusion 4
Position on landscape: Scattered peaks of mountains and foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Locane soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Zoesta soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bucan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Locane Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to rock, small stones, slope
Shallow excavations: Severe—depth to rock, slope
Local roads and streets: Severe—depth to rock, slope
Roadfill: Poor—depth to rock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to rock, small stones, slope
Pond reservoir areas: Severe—depth to rock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Zoesta Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Fair—shrink-swell, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Ratings of the Bucan Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—low strength, shrink-swell, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, too clayey, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Locane soil—VIIs, nonirrigated; Zoesta soil—VIs, nonirrigated; Bucan soil—VIIe, nonirrigated
Range site: Locane soil—024X005N; Zoesta soil—024X018N; Bucan soil—024X028N

3621—Minat-Bojo-Stingdorn association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,400 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Minat very cobbly sandy loam, 30 to 50 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—35 percent
• Bojo extremely gravelly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy, mixed, mesic—30 percent
• Stingdorn very gravelly loam, 30 to 50 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—8 percent
• Inclusion 2: Rubble land—7 percent

Characteristics of the Minat Soil

Position on landscape: Side slopes of foothills
Parent material: Kind—colluvium influenced by volcanic ash; source—cherts and shales
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, Douglas rabbitbrush, Thurber needlegrass, bluegrass
Surface cover: 45 percent pebbles, 25 percent cobbles

Typical Profile

0 to 9 inches—very cobbly sandy loam; 30 to 45 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-2
9 to 27 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
27 to 60 inches or more—very gravelly fine sandy loam, very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.0 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Bojo Soil

Position on landscape: North-facing side slopes of foothills
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, shadscale, bottlebrush squirreltail

Typical Profile

0 to 4 inches—extremely gravelly loam; 10 to 25 percent cobbles and stones and 65 to 80 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
4 to 10 inches—gravelly clay loam, gravelly loam, clay loam; 0 to 10 percent cobbles and stones and 15 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-6
10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 5 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.2 to 1.4 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Stingdorn Soil

Position on landscape: South-facing side slopes of foothills
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2
7 to 15 inches—very cobbly clay loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—GC; estimated AASHTO classification—A-6
15 to 20 inches—indurated duripan; massive
20 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.8 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Cliffs on eroded side slopes and rimrock on shoulder slopes of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Side slopes of foothills below rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Minat soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bojo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Stingdorn soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Minat Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Ratings of the Bojo Soil for Selected Uses
Range seeding: Poor—too arid, droughty, depth to bedrock
Daily cover for landfill: Severe—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Stingdorn Soil for Selected Uses
Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—depth to bedrock, cemented pan, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, cemented pan
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Minat soil—VIIs, nonirrigated; Bojo soil—VIIs, nonirrigated; Stingdorn soil—VIIs, nonirrigated
Range site: Minat soil—024X005N; Bojo soil—024X026N; Stingdorn soil—024X002N

3622—Minat-Minat, eroded, association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,200 to 5,800 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Minat very cobbly loam, 50 to 75 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—65 percent
• Minat very cobbly loam, 50 to 75 percent slopes, eroded—Xerollic Camborthids, loamy-skeletal, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—3 percent
• Inclusion 2: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 3: Settlemeyer fine sandy loam, drained, 2 to 8 percent slopes—Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic—3 percent
• Inclusion 4: Rubble land—6 percent

Characteristics of the Minat Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium influenced by volcanic ash; source—cherts and shales
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Douglas rabbitbrush, Thurber needlegrass, bluegrass

Typical Profile

0 to 9 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC, SM-SC, SC; estimated AASHTO classification—A-4, A-6, A-2
9 to 27 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
27 to 60 inches or more—very gravelly fine sandy loam, very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.0 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Minat, Eroded, Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—colluvium influenced by volcanic ash; source—cherts and shales
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluebunch wheatgrass, Douglas rabbitbrush, Thurber needlegrass, bluegrass

Typical Profile

0 to 4 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC, SM-SC, SC; estimated AASHTO classification—A-4, A-6, A-2

4 to 21 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2

21 to 60 inches or more—very gravelly fine sandy loam, very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.0 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Rimrock on shoulder slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 2
Position on landscape: Concave inset fan remnants
Contrasting features: Slopes of 2 to 8 percent
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass

Inclusion 3
Position on landscape: Drainageways of mountains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 4
Position on landscape: Vertical rock stripes on side slopes of mountains below rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Minat soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Minat, eroded, soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Minat Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Ratings of the Minat, Eroded, Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Interpretive Groups

Capability classification: Minat soil—VIIs, nonirrigated; Minat, eroded, soil—VIIs, nonirrigated
Range site: Minat soil—024X005N; Minat, eroded, soil—024X035N

3624—Minat-Colbar-Atlow association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,800 to 6,400 feet
Average annual precipitation: About 10 inches

Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Minat very cobbly loam, 30 to 50 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—50 percent
• Colbar cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—20 percent
• Atlow very cobbly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 4 to 15 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 2: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, fine-loamy, mixed, mesic—4 percent
• Inclusion 3: Rock outcrop—4 percent
• Inclusion 4: Rubble land—3 percent

Characteristics of the Minat Soil

Position on landscape: West-, north-, and east-facing canyon escarpments on side slopes of mountains
Parent material: Kind—colluvium influenced by volcanic ash; source—cherts and shales
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming sagebrush, Douglas rabbitbrush, Thurber needlegrass, bluegrass

Typical Profile

0 to 9 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC, SM-SC, SC; estimated AASHTO classification—A-4, A-6, A-2
9 to 27 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
27 to 60 inches or more—very gravelly fine sandy loam, very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 5.8 to 7.0 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Colbar Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, pine bluegrass, Thurber needlegrass

Typical Profile

0 to 3 inches—cobbly loam; 35 to 45 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Atlow Soil

Position on landscape: Crests and shoulder slopes of mountains
Parent material: Kind—residuum influenced by loess; source—altered rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, bluegrass, rabbitbrush

Typical Profile

0 to 3 inches—very cobbly loam; 35 to 50 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
3 to 14 inches—very gravelly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.3 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow drainageways of mountains
Contrasting features: Slopes of 4 to 15 percent
Distinctive present vegetation: Wyoming big sagebrush, Indian ricegrass, bluegrass
Inclusion 2
Position on landscape: Broad drainageways of mountains
Contrasting features: Slopes of 2 to 8 percent, receives additional moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush
Inclusion 3
Position on landscape: Rimrock on side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 4
Position on landscape: Vertical rock stripes on side slopes of mountains below rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Minat soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Minat Soil for Selected Uses
Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Ratings of the Colbar Soil for Selected Uses
Range seeding: Fair—droughty, large stones, too arid
Daily cover for landfill: Poor—depth to bedrock, slope, large stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, large stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Moderate—large stones, piping

Ratings of the Atlow Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Minat soil—VIIs, nonirrigated; Colbar soil—VIIe, nonirrigated; Atlow soil—VIIs, nonirrigated
Range site: Minat soil—024X005N; Colbar soil—024X005N; Atlow soil—024X030N

3650—McVegas-Old Camp-Kingingham association

Map Unit Setting

Position on landscape: Foothills and fan piedmonts
Elevation: 5,200 to 5,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• McVegas very cobbly loam, 15 to 30 percent slopes—Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow—45 percent
• Old Camp very gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—25 percent
• Kingingham gravelly very fine sandy loam, 4 to 8 percent slopes—Typic Nadurargids, fine, montmorillonitic, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 15 to 30 percent slopes—Xeric Torriorthents, fine-loamy, mixed (calcareous), mesic—6 percent
• Inclusion 2: Xerollic Haplargids, 2 to 8 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 3: Rock outcrop—3 percent

Characteristics of the McVegas Soil

Position on landscape: South-facing side slopes of foothills
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—very cobbly loam; 35 to 45 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-4
5 to 19 inches—very cobbly clay, very cobbly clay loam, very cobbly silty clay; 30 to 40 percent cobbles and stones and 25 to 35 percent pebbles (by weight); prismatic structure; very hard, very firm; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, CH, GC; estimated AASHTO classification—A-7
19 to 22 inches—strongly cemented duripan
22 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 15 to 23 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.5 to 2.9 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Old Camp Soil

Position on landscape: North-facing side slopes of foothills
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, bluegrass

Typical Profile

0 to 5 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 5 to 55 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2
5 to 11 inches—very gravelly clay loam; 5 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
11 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.9 to 1.3 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Kingingham Soil

Position on landscape: Fan piedmonts at the base of foothills
Parent material: Gravelly mixed alluvium capped with a thin loess mantle
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, pine bluegrass

Typical Profile

0 to 7 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
7 to 22 inches—gravelly clay loam, gravelly clay, gravelly silty clay loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 15 to 30); estimated Unified classification—CL, CH, GC; estimated AASHTO classification—A-7
22 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 20 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 3.5 to 4.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Eroded side slopes of foothills
Contrasting features: Lacks layer of clay accumulation
Distinctive present vegetation: Shadscale, Wyoming big sagebrush, bottlebrush squirreltail
Inclusion 2
Position on landscape: Inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Spiny hopsage, Wyoming big sagebrush, bottlebrush squirreltail
Inclusion 3
Position on landscape: Scattered peaks of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the McVegas soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Old Camp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Kingingham soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the McVegas Soil for Selected Uses
Range seeding: Poor—too arid, droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack, large stones
Shallow excavations: Severe—depth to bedrock, slope, cemented pan
Local roads and streets: Severe—low strength, slope, depth to bedrock
Roadfill: Poor—depth to bedrock, low strength, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, large stones, slope
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope, too clayey
Embankments, dikes, and levees: Severe—large stones

Ratings of the Old Camp Soil for Selected Uses
Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Kingingham Soil for Selected Uses
Range seeding: Poor—too arid, rooting depth, excess salt
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—cemented pan, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, too clayey
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: McVegas soil—VIIs, nonirrigated; Old Camp soil—VIIs, nonirrigated; Kingingham soil—VIIs, nonirrigated
Range site: McVegas soil—024X002N; Old Camp soil—024X005N; Kingingham soil—024X002N

3651—McVegas-Beoska association

Map Unit Setting

Position on landscape: Foothills and adjacent fan piedmonts
Elevation: 5,000 to 5,400 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• McVegas cobbly loam, 15 to 30 percent slopes—Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow—45 percent
• Beoska gravelly loam, 4 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Orovada fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—7 percent
• Inclusion 2: Old Camp gravelly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 3: Puett very gravelly loam, 15 to 30 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—2 percent

Characteristics of the McVegas Soil

Position on landscape: Crests and side slopes of foothills
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 5 inches—cobbly loam; 20 to 30 percent cobbles and stones and 20 to 30 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, GM, ML; estimated AASHTO classification—A-4
5 to 19 inches—very cobbly clay, very cobbly clay loam, very cobbly silty clay; 25 to 40 percent cobbles and

stones and 25 to 35 percent pebbles (by weight); prismatic structure; very hard, very firm; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, CH, GC; estimated AASHTO classification—A-7

19 to 22 inches—strongly cemented duripan

22 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 15 to 30 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.5 to 2.9 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Beoska Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, SM-SC; estimated AASHTO classification—A-4

8 to 18 inches—silt loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

18 to 60 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 7.9 to 9.8 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Inclusion 2
Position on landscape: Concave, north-facing side slopes of foothills
Contrasting features: Bedrock at a depth of 10 to 20 inches
Distinctive present vegetation: Wyoming big sagebrush, bluegrass

Inclusion 3
Position on landscape: Concave shoulders and erosion balloons of foothills
Contrasting features: Underlain by soft, semiconsolidated sediments
Distinctive present vegetation: Black sagebrush, Wyoming big sagebrush, bluegrass Indian ricegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the McVegas soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the McVegas Soil for Selected Uses
Range seeding: Poor—too arid, excess salt, excess sodium

Daily cover for landfill: Poor—depth to bedrock, hard to pack, large stones
Shallow excavations: Severe—depth to bedrock, slope, cemented pan
Local roads and streets: Severe—low strength, slope, depth to bedrock
Roadfill: Poor—depth to bedrock, low strength, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, cemented pan, too clayey
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones, excess sodium

Ratings of the Beoska Soil for Selected Uses

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: McVegas soil—VIIs, nonirrigated; Beoska soil—VIIs, nonirrigated
Range site: McVegas soil—024X002N; Beoska soil—024X002N

3652—McVegas-Stingdorn-Colbar association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,400 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• McVegas very cobbly loam, 15 to 30 percent slopes—Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow—35 percent
• Stingdorn extremely cobbly fine sandy loam, 30 to 50 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic, shallow—30 percent
• Colbar very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop and Rubble land—9 percent
• Inclusion 2: Xerollic Camborthids, 30 to 50 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Durorthidic Xeric Torrifluvents, 8 to 15 percent slopes—Durorthidic Xeric Torrifluvents, loamy-skeletal, mixed (calcareous), mesic—2 percent

Characteristics of the McVegas Soil

Position on landscape: Lower side slopes of foothills
Parent material: Kind—residuum and colluvium; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Surface cover: 10 percent pebbles, 30 percent cobbles

Typical Profile

0 to 5 inches—very cobbly loam; 35 to 45 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM; estimated AASHTO classification—A-4
5 to 19 inches—very cobbly clay, very cobbly clay loam, very cobbly silty clay; 25 to 40 percent cobbles and stones and 25 to 35 percent pebbles (by weight); prismatic structure; very hard, very firm; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL, CH, GC; estimated AASHTO classification—A-7
19 to 22 inches—strongly cemented duripan
22 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to bedrock: 15 to 23 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 2.5 to 2.9 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8

Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Stingdorn Soil

Position on landscape: South- and west-facing, upper side slopes of foothills
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—extremely cobbly fine sandy loam; 50 to 60 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-2, A-1
7 to 15 inches—very cobbly clay loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC; estimated AASHTO classification—A-6
15 to 20 inches—indurated duripan; massive
20 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 1.9 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Colbar Soil

Position on landscape: North-facing, upper side slopes of foothills
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, Thurber needlegrass

Typical Profile

0 to 3 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 22 inches—cobbly loam, gravelly clay loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
22 to 26 inches—gravelly loam, cobbly loam; 5 to 30 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
26 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 3.3 to 3.8 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Rimrock on shoulders and rock stripes on side slopes of foothills below rock outcrop
Contrasting features: Bedrock exposed at the soil surface or more than 90 percent stones on the surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Concave foot slopes of foothills
Contrasting features: Bedrock at a depth of more than 40 inches

Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass

Inclusion 3

Position on landscape: Concave drainageways of foothills

Contrasting features: Receives additional moisture from runoff

Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:

Suitability of the McVegas soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Suitability of the Stingdorn soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the McVegas Soil for Selected Uses

Range seeding: Poor—droughty, large stones, too arid

Daily cover for landfill: Large stones, depth to bedrock, hard to pack

Shallow excavations: Severe—depth to bedrock, slope, cemented pan

Local roads and streets: Severe—low strength, slope, depth to bedrock

Roadfill: Poor—depth to bedrock, low strength, slope

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Poor—depth to bedrock, cemented pan, too clayey

Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope

Embankments, dikes, and levees: Severe—large stones, excess sodium

Ratings of the Stingdorn Soil for Selected Uses

Range seeding: Poor—droughty, large stones, too arid

Daily cover for landfill: Poor—depth to bedrock, large stones, slope

Shallow excavations: Severe—depth to bedrock, cemented pan, large stones

Local roads and streets: Severe—depth to bedrock, large stones, slope

Roadfill: Poor—depth to bedrock, large stones, slope

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Poor—depth to bedrock, small stones, cemented pan

Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope

Embankments, dikes, and levees: Severe—large stones

Ratings of the Colbar Soil for Selected Uses

Range seeding: Poor—large stones

Daily cover for landfill: Poor—depth to bedrock, slope, large stones

Shallow excavations: Severe—depth to bedrock, slope

Local roads and streets: Severe—slope

Roadfill: Poor—depth to bedrock, slope

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Poor—slope, large stones

Pond reservoir areas: Severe—seepage, slope

Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: McVegas soil—VIIs, nonirrigated; Stingdorn soil—VIIs, nonirrigated; Colbar soil—VIIs, nonirrigated

Range site: McVegas soil—024X002N; Stingdorn soil—024X002N; Colbar soil—024X005N

3661—Dun Glen-Whirlo association

Map Unit Setting

Position on landscape: Piedmont slopes

Elevation: 4,600 to 5,200 feet

Average annual precipitation: About 7 inches

Average annual air temperature: About 48 degrees F

Frost-free season: About 110 days

Composition

Major components:

• Dun Glen very fine sandy loam, 0 to 4 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—60 percent

• Whirlo fine sandy loam, 0 to 4 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—25 percent

Contrasting inclusions:

• Inclusion 1: Typic Haplargids, 0 to 4 percent slopes—Typic Haplargids, loamy-skeletal, mixed, mesic—8 percent

• Inclusion 2: Duric Camborthids, 0 to 4 percent slopes—Duric Camborthids, loamy-skeletal, mixed, mesic—7 percent

Characteristics of the Dun Glen Soil

Position on landscape: Fan skirts

Parent material: Mixed alluvium influenced by loess and volcanic ash

Slope features: Length—long; shape—convex

Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass, bottlebrush squirreltail

Typical Profile

0 to 3 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML; estimated AASHTO classification—A-4

3 to 10 inches—very fine sandy loam, silt loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—ML; estimated AASHTO classification—A-4

10 to 60 inches or more—fine sandy loam, very fine sandy loam; 0 to 15 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 6.8 to 8.0 inches
Water-supplying capacity: 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Inset fans and fan skirt remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Indian ricegrass

Typical Profile

0 to 12 inches—fine sandy loam; 15 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.1); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

12 to 24 inches—very gravelly fine sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

24 to 60 inches or more—stratified very gravelly loam to extremely gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grained; loose; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 4.9 to 6.1 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, nonburied fan piedmont remnants
Contrasting features: Layer of clay accumulation
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 2
Position on landscape: Fan skirt remnants
Contrasting features: Layer of weak silica accumulation
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Dun Glen soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Dun Glen Soil for Selected Uses
Range seeding: Poor—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Whirlo Soil for Selected Uses
Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Dun Glen soil—IIe, irrigated, and VIIc, nonirrigated; Whirlo soil—IIe, irrigated, and VIIs, nonirrigated
Range site: Dun Glen soil—024X002N; Whirlo soil—024X002N

3690—Izod-Koynik-Rock outcrop association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,500 to 6,100 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Izod cobbly loam, 15 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic—40 percent
• Koynik very gravelly very fine sandy loam, 15 to 30 percent slopes—Lithic Torriorthents, loamy-skeletal, carbonatic, mesic—30 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids, 8 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Xerollic Camborthids, 15 to 30 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Xeric Torriorthents, 4 to 15 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Izod Soil

Position on landscape: North- and east-facing side slopes of foothills
Parent material: Kind—residuum; source—interbedded shale and limestone
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 4 inches—cobbly loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SM, CL-ML, ML; estimated AASHTO classification—A-4
4 to 10 inches—very gravelly loam, extremely gravelly loam; 0 to 25 percent cobbles and stones and 50 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GM; estimated AASHTO classification—A-2
10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 7 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.4 to 0.5 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Koynik Soil

Position on landscape: South-facing side slopes of foothills
Slope features: Length—short; shape—convex

Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, bluegrass

Typical Profile

0 to 6 inches—very gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SM, GM-GC, GM; estimated AASHTO classification—A-1, A-2

6 to 8 inches—very gravelly loam, very gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC, GC, SC; estimated AASHTO classification—A-2

8 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.6 to 0.7 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Rock Outcrop

Position on landscape: Multiple ledges and locally exposed bedrock along broad bedding planes
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex summits of foothills
Contrasting features: Slopes of 8 to 15 percent
Distinctive present vegetation: Black sagebrush, bluegrass

Inclusion 2
Position on landscape: Concave, north-facing side slopes of foothills
Contrasting features: Bedrock at a depth of more than 20 inches
Distinctive present vegetation: Wyoming big sagebrush, Indian ricegrass, Thurber needlegrass

Inclusion 3
Position on landscape: Concave drainageways of foothills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Spiny hopsage, Wyoming big sagebrush, bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Izod soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Koynik soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Izod Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Koynik Soil for Selected Uses
Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Izod soil—VIIs, nonirrigated; Koynik soil—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Izod soil—024X030N; Koynik soil—024X002N

3691—Izod-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,500 to 6,100 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Izod extremely cobbly loam, 15 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic—65 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 4 to 15 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Durorthidic Xeric Torriorthents, 2 to 8 percent slopes—Durorthidic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 3: Kram very stony loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic—3 percent

Characteristics of the Izod Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum; source—interbedded shale and limestone
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, Sandberg bluegrass, bottlebrush squirreltail
Surface cover: 30 percent pebbles, 25 percent cobbles, 5 percent stones

Typical Profile

0 to 4 inches—extremely cobbly loam; 40 to 50 percent cobbles and stones and 60 to 75 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SM, GM-GC, GC; estimated AASHTO classification—A-2
4 to 10 inches—very gravelly loam, extremely gravelly loam; 0 to 25 percent cobbles and stones and 50 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GM; estimated AASHTO classification—A-2
10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 7 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.4 to 0.5 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Scattered peaks and rimrock on shoulder slopes of mountains
Dominant present vegetation: None

Contrasting Inclusions

Inclusion 1

Position on landscape: Concave toe slopes of mountains
Contrasting features: Bedrock at a depth of more than 20 inches
Distinctive present vegetation: Wyoming big sagebrush, Indian ricegrass, bluegrass

Inclusion 2

Position on landscape: Drainageways of mountains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 3

Position on landscape: Concave side slopes of mountains
Contrasting features: Highly calcareous throughout the profile
Distinctive present vegetation: Black sagebrush, Utah juniper, singleleaf pinyon

Ratings of the Izod Soil for Selected Uses

Range seeding: Poor—droughty, large stones, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope

Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Izod soil—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Izod soil—024X030N

3693—Izod-Attella-Xine association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 7,000 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Izod cobbly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic—40 percent
• Attella very gravelly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid—30 percent
• Xine gravelly loam, 30 to 50 percent slopes—Aridic Calcixerolls, loamy-skeletal, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Aridic Argixerolls, 15 to 50 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—5 percent
• Inclusion 2: Lithic Xeric Torriorthents, 8 to 30 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 3: Cumulic Haploxerolls, 2 to 8 percent slopes—Cumulic Haploxerolls, coarse-loamy, mixed, frigid—3 percent
• Inclusion 4: Rock outcrop—2 percent

Characteristics of the Izod Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—interbedded shale and limestone
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 4 inches—cobbly loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SM, CL-ML, ML; estimated AASHTO classification—A-4
4 to 10 inches—very gravelly loam, extremely gravelly loam; 0 to 25 percent cobbles and stones and 50 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GM; estimated AASHTO classification—A-2
10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 7 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.4 to 0.5 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Attella Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—dolomite
Slope features: Length—short; shape—convex
Dominant present vegetation: Singleleaf pinyon, Wyoming big sagebrush, bluegrass, Utah juniper

Typical Profile

0 to 3 inches—very gravelly loam; 5 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
3 to 7 inches—very gravelly loam, very gravelly silt loam; 5 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified

classification—GC, GM-GC; estimated AASHTO classification—A-2
7 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 6 to 10 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.7 to 1.0 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Xine Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—shale
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, Idaho fescue, bluebunch wheatgrass

Typical Profile

0 to 10 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); granular structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
10 to 33 inches—very cobbly loam, very cobbly sandy loam; 35 to 50 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2, A-4
33 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.5 to 4.2 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower, north-facing side slopes of mountains
Contrasting features: Layer of clay accumulation
Distinctive present vegetation: Mountain big sagebrush, serviceberry, Idaho fescue
Inclusion 2
Position on landscape: Convex shoulder slopes of mountains
Contrasting features: Bedrock at a depth of 11 to 20 inches
Distinctive present vegetation: Black sagebrush, bluegrass
Inclusion 3
Position on landscape: Drainageways of mountains
Contrasting features: Receives additional moisture from runoff, slopes of 2 to 8 percent
Distinctive present vegetation: Basin wildrye, basin big sagebrush
Inclusion 4
Position on landscape: Scattered peaks and severely eroded side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Attella soil:
Site index for common trees: Singleleaf pinyon—40; Utah juniper—40
Most important native understory plants: Mountain big sagebrush, bluegrass

Wildlife habitat elements:
Suitability of the Izod soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Attella soil for named elements: Wild herbaceous plants (nonirrigated)—poor; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Xine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Izod Soil for Selected Uses

Range seeding: Poor—droughty, erodes easily, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Attella Soil for Selected Uses

Range seeding: Poor—droughty, small stones, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Xine Soil for Selected Uses

Range seeding: Fair—erodes easily, too arid
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, small stones
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Izod soil—VIIs, nonirrigated; Attella soil—VIIs, nonirrigated; Xine soil—VIIe, nonirrigated
Range site: Izod soil—024X030N; Attella soil—025X062N; Xine soil—024X021N
Woodland suitability group: Attella soil—1R

3740—Kelk silt loam, saline, 0 to 4 percent slopes

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,800 to 5,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Kelk silt loam, saline, 0 to 4 percent slopes—Durixerollic Camborthids, fine-silty, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Kelk very fine sandy loam, 0 to 4 percent slopes, occasionally flooded—Durixerollic Camborthids, fine-silty, mixed, mesic—7 percent
• Inclusion 2: Broyles very fine sandy loam, 0 to 4 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Durorthidic Torriorthents, 0 to 4 percent slopes—Durorthidic Torriorthents, coarse-silty, mixed (calcareous), mesic—3 percent

Characteristics of the Kelk Soil

Position on landscape: Inset fan remnants
Parent material: Silty mixed alluvium and loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Rubber rabbitbrush, basin wildrye, black greasewood, basin big sagebrush

Typical Profile

0 to 3 inches—silt loam; platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
3 to 18 inches—silt loam; subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR 5 to 13); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
18 to 42 inches—silt loam; massive; hard, firm; moderately alkaline (pH 8.4); slightly saline to moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 25); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
42 to 60 inches or more—silt loam; massive; soft, very friable; moderately alkaline (pH 8.2); slightly saline to moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches

Frequency of flooding: None
Permeability: Slow
Available water capacity: 10 to 12 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Inset fans
Contrasting features: Occasionally flooded
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 2
Position on landscape: Adjacent fan skirts
Contrasting features: Fine sandy loam throughout the profile
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 3
Position on landscape: Adjacent foot slopes to the inset fans
Contrasting features: Strongly salt-affected substratum
Distinctive present vegetation: Big saltbush, black greasewood, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Kelk Soil for Selected Uses
Range seeding: Poor—excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, frost action, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: IIe, irrigated, and VIs, nonirrigated
Range site: 024X022N

3741—Kelk-Settlemeyer association

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,900 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Kelk very fine sandy loam, 0 to 4 percent slopes, occasionally flooded—Durixerollic Camborthids, fine-silty, mixed, mesic—55 percent
• Settlemeyer fine sandy loam, drained, 0 to 4 percent slopes—Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 0 to 4 percent slopes—Xerollic Camborthids, fine-loamy, mixed, mesic—10 percent
• Inclusion 2: Duric Camborthids, 0 to 4 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—3 percent
• Inclusion 3: Aeric Fluvaquents, 0 to 4 percent slopes—Aeric Fluvaquents, loamy-skeletal, mixed (calcareous), mesic—2 percent

Characteristics of the Kelk Soil

Position on landscape: Lower inset fans
Parent material: Silty mixed alluvium and loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye, black greasewood

Typical Profile

0 to 14 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

14 to 51 inches—silt loam; 0 to 5 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

51 to 60 inches or more—silt loam; 0 to 10 percent pebbles (by weight); massive; soft, friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through June
Permeability: Slow
Available water capacity: 11.2 to 12.5 inches
Water-supplying capacity: 9 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Settlemeyer Soil

Position on landscape: Dissected inset fans on upper part of unit
Parent material: Mixed alluvium
Slope features: Length—short; shape—concave
Dominant present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye

Typical Profile

0 to 16 inches—fine sandy loam; platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, SM; estimated AASHTO classification—A-4
16 to 40 inches—silt loam, silty clay loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
40 to 60 inches or more—fine sandy loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: December through March—36 to 48 inches; rest of year—below 48 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 9.4 to 11.0 inches
Water-supplying capacity: 12 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower inset fan remnants
Contrasting features: Strongly salt-affected substratum
Distinctive present vegetation: Big saltbush, black greasewood
Inclusion 2
Position on landscape: Fanlettes from adjacent fan piedmont remnants
Contrasting features: Nonflooded
Distinctive present vegetation: Shadscale, black greasewood, spiny hopsage
Inclusion 3
Position on landscape: Areas adjacent to irregularly shaped channels of inset fans
Contrasting features: Frequently flooded
Distinctive present vegetation: Saltcedar, willow, rose

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Kelk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Settlemeyer soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Kelk Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—low strength, flooding
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Settlemeyer Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—frost action, low strength
Roadfill: Poor—low strength

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Slight
Embankments, dikes, and levees: Moderate—wetness

Interpretive Groups

Capability classification: Kelk soil—IIw, irrigated, and VIw, nonirrigated; Settlemeyer soil—IIw, irrigated, and VIw, nonirrigated
Range site: Kelk soil—024X006N; Settlemeyer soil—025X003N

3742—Kelk-Ocala association

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,600 to 4,800 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Kelk very fine sandy loam, 0 to 2 percent slopes, occasionally flooded—Durixerollic Camborthids, fine-silty, mixed, mesic—55 percent
• Ocala silt loam, 0 to 2 percent slopes, occasionally flooded—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Torriorthents, 0 to 4 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Aeric Halaquepts, 0 to 2 percent slopes—Aeric Halaquepts, fine-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Aquic Torriorthents, 0 to 2 percent slopes—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Kelk Soil

Position on landscape: Broad inset fans dissecting alluvial flats
Parent material: Silty mixed alluvium and loess
Slope features: Length—short; shape—smooth
Dominant present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye, black greasewood

Typical Profile

0 to 14 inches—very fine sandy loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6
14 to 51 inches—silt loam; 0 to 5 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6
51 to 60 inches or more—silt loam; 0 to 10 percent pebbles (by weight); massive; soft, friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through June
Permeability: In the upper 42 inches—slow; below this depth—moderate
Available water capacity: 11.3 to 12.5 inches
Water-supplying capacity: 9 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Ocala Soil

Position on landscape: Alluvial flats
Parent material: Mixed alluvium influenced by volcanic ash
Slope features: Length—short; shape—smooth
Dominant present vegetation: Black greasewood, seepweed, rabbitbrush

Typical Profile

0 to 13 inches—silt loam; platy structure; slightly hard, friable; very strongly alkaline (pH 9.2); strongly saline (more than 16 mmhos/cm); moderately sodic (SAR 30 to 46); estimated Unified classification—ML, CL; estimated AASHTO classification—A-4, A-6
13 to 60 inches or more—silt loam, silty clay loam; massive; hard, firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 20 to 35); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: February through May—42 to 60 inches; rest of year—below 60 inches
Flooding: Frequency—occasional; duration—brief or long; months—February through May
Permeability: Slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: 8 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, alluvial flat remnants
Contrasting features: Calcareous throughout and well drained
Distinctive present vegetation: Shadscale, black greasewood, Indian ricegrass
Inclusion 2
Position on landscape: Ponded areas associated with coppice mounds
Contrasting features: Poorly drained
Distinctive present vegetation: Black greasewood, seepweed
Inclusion 3
Position on landscape: Fan skirts overplacing alluvial flats
Contrasting features: Somewhat poorly drained
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Kelk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Ocala soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Kelk Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—low strength, flooding
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping

Ratings of the Ocala Soil for Selected Uses
Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, frost action, flooding
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Kelk soil—IIw, irrigated, and VIw, nonirrigated; Ocala soil—VIIw, nonirrigated
Range site: Kelk soil—024X006N; Ocala soil—024X007N

3840—Jung-Norfork-Buffaran association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,500 to 6,400 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 100 days

Composition

Major components:
• Jung very gravelly loam, 8 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—35 percent
• Norfork gravelly loam, 15 to 30 percent slopes—Xerollic Durargids, clayey, montmorillonitic, mesic, shallow—25 percent
• Buffaran gravelly loam, 4 to 8 percent slopes, very stony—Xerollic Durargids, clayey, montmorillonitic, mesic, shallow—25 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xeric Torriorthents, 15 to 30 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—6 percent
• Inclusion 2: Durixerollic Haplargids, 2 to 8 percent slopes—Durixerollic Haplargids, fine, montmorillonitic, mesic—6 percent
• Inclusion 3: Rock outcrop—3 percent

Characteristics of the Jung Soil

Position on landscape: Crests and shoulder slopes of foothills
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
8 to 19 inches—very cobbly clay, very gravelly clay loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; very hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Norfork Soil

Position on landscape: North-facing side slopes of foothills
Parent material: Kind—residuum influenced by loess; source—metavolcanic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, bluegrass, bottlebrush squirreltail, small rabbitbrush
Surface cover: 25 percent pebbles, 5 percent cobbles

Typical Profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); granular structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-4, A-6
3 to 14 inches—gravelly silty clay, gravelly silty clay loam; 30 to 45 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than less than 2); estimated Unified classification—GM, ML, MH; estimated AASHTO classification—A-7
14 to 17 inches—gravelly loam; 25 to 50 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC, SM-SC, SC; estimated AASHTO classification—A-4, A-6
17 to 22 inches—indurated duripan; massive; extremely hard, extremely firm
22 inches or more—unweathered bedrock

Soil and Water Features

Depth to hardpan: 10 to 20 inches
Depth to bedrock: 21 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Buffaran Soil

Position on landscape: Summits of interhill fans
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, bottlebrush squirreltail

Typical Profile

0 to 4 inches—gravelly loam; 5 to 15 percent cobbles and stones and 20 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated

Unified classification—SC, CL; estimated AASHTO classification—A-6

4 to 15 inches—gravelly clay loam, gravelly clay, clay; 0 to 5 percent cobbles and stones and 15 to 30 percent pebbles (by weight); prismatic structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

15 to 60 inches or more—indurated duripan; massive; extremely hard, extremely firm

Soil and Water Features

Depth to hardpan: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.6 to 2.2 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Severely eroded, convex side slopes of foothills
Contrasting features: Bedrock at a depth of 8 to 14 inches
Distinctive present vegetation: Black sagebrush, bluegrass

Inclusion 2
Position on landscape: Inset fans
Contrasting features: Very deep
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Inclusion 3
Position on landscape: Scattered peaks of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Jung soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Norfork soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Buffaran soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Jung Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Moderate—hard to pack, large stones

Ratings of the Norfork Soil for Selected Uses
Range seeding: Poor—erodes easily, droughty
Daily cover for landfill: Poor—depth to bedrock, hard to pack, slope
Shallow excavations: Severe—depth to bedrock, slope, cemented pan
Local roads and streets: Severe—shrink-swell, slope, cemented pan
Roadfill: Poor—depth to bedrock, shrink-swell, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, too clayey, small stones
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—hard to pack

Ratings of the Buffaran Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan, low strength
Roadfill: Poor—low strength, cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Jung soil—VIIs, nonirrigated;

Norfork soil—VIIe, nonirrigated; Buffaran soil—VIIs, nonirrigated
Range site: Jung soil—024X030N; Norfork soil—024X030N; Buffaran soil—024X005N

3841—Jung-Itca-Roca association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,800 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Jung very cobbly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—35 percent
• Itca very cobbly loam, 15 to 30 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—25 percent
• Roca very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids, 15 to 30 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, mixed, mesic—9 percent
• Inclusion 2: Durixerollic Haplargids, 4 to 15 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—3 percent
• Inclusion 3: Rock outcrop—3 percent

Characteristics of the Jung Soil

Position on landscape: South- and west-facing, lower side slopes of crests and mountains
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very cobbly loam; 35 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
8 to 19 inches—very cobbly clay loam, very gravelly clay loam, very cobbly clay; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; very hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Itca Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Singleleaf pinyon, mountain big sagebrush, bluebunch wheatgrass, bluegrass, Utah juniper

Typical Profile

0 to 9 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-4, A-6
9 to 17 inches—very gravelly clay, very cobbly clay loam, extremely gravelly clay; 0 to 55 percent cobbles and stones and 25 to 70 percent pebbles (by weight); prismatic structure; hard, firm; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL, GC; estimated AASHTO classification—A-7, A-2
17 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None

Permeability: Slow
Available water capacity: 1.8 to 2.3 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Roca Soil

Position on landscape: Upper, south-facing side slopes of mountains
Parent material: Kind—colluvium and residuum; source—volcanic rock
Slope features: Length—short; shape—convex to slightly concave
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, needlegrass, bluegrass

Typical Profile

0 to 5 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 15 to 25 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
5 to 27 inches—very gravelly clay loam, very gravelly clay; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
27 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.6 inches
Water-supplying capacity: 11 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Lower side slopes of mountains
Contrasting features: Mixed mineralogy clay
Distinctive present vegetation: Mountain and Wyoming big sagebrush, needlegrass, bluegrass
Inclusion 2
Position on landscape: Slightly concave toe slopes of mountains
Contrasting features: Very deep
Distinctive present vegetation: Wyoming big sagebrush, bluegrass
Inclusion 3
Position on landscape: Random small peaks and ridges of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Itca soil:
Site index for common trees: Singleleaf pinyon—70
Most important native understory plants: Mountain big sagebrush, bluebunch wheatgrass, bluegrass

Wildlife habitat elements:
Suitability of the Jung soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Itca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Jung Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Itca Soil for Selected Uses
Range seeding: Poor—droughty, large stones

Daily cover for landfill: Poor—depth to bedrock, too clayey, small stones
Shallow excavations: Severe—depth to bedrock, slope, large stones
Local roads and streets: Severe—depth to bedrock, slope, large stones
Roadfill: Poor—depth to bedrock, large stones, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—large stones

Ratings of the Roca Soil for Selected Uses

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Jung soil—VIIs, nonirrigated; Itca soil—VIIs, nonirrigated; Roca soil—VIIs, nonirrigated
Range site: Jung soil—024X028N; Itca soil—025X061N; Roca soil—024B028N
Woodland suitability group: Itca soil—2X

3843—Jung, steep-Robson-Jung association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Jung very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—35 percent
• Robson cobbly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—30 percent
• Jung very gravelly loam, 8 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 15 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 2: Typic Natrargids, 15 to 50 percent slopes—Typic Natrargids, fine, montmorillonitic, mesic—4 percent
• Inclusion 3: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 4: Rock outcrop—2 percent

Characteristics of the Jung, Steep, Soil

Position on landscape: East-, west-, and lower north-facing side slopes of mountains
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
8 to 19 inches—very cobbly clay, very gravelly clay loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; very hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight

Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Robson Soil

Position on landscape: North-facing, upper side slopes of mountains
Parent material: Kind—residuum; source—chert and shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, Sandberg bluegrass, small rabbitbrush, black sagebrush

Typical Profile

0 to 7 inches—cobbly loam; 15 to 45 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SC, CL-ML, CL; estimated AASHTO classification—A-4, A-6
7 to 19 inches—very cobbly clay, extremely cobbly clay; 50 to 80 percent cobbles and stones and 35 to 50 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 12 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 0.9 to 1.9 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Low

Characteristics of the Jung Soil

Position on landscape: Crests and shoulder slopes of mountains
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
8 to 19 inches—very cobbly clay, very gravelly clay loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; very hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: South-facing back slopes of mountains
Contrasting features: Bedrock at a depth of more than 20 inches
Distinctive present vegetation: Wyoming big sagebrush, bluegrass, needlegrass
Inclusion 2
Position on landscape: South-facing, convex foot slopes of mountains
Contrasting features: Bedrock at a depth of more than 20 inches
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Mountain valley fans
Contrasting features: Very deep

Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Inclusion 4

Position on landscape: Random small peaks and ridges of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Jung, steep, soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Robson soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Jung soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Jung, Steep, Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Robson Soil for Selected Uses
Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—depth to bedrock, large stones, slope
Local roads and streets: Severe—depth to bedrock, large stones, slope
Roadfill: Poor—depth to bedrock, large stones, slope
Sand: Improbable source—large stones, excess fines
Gravel: Improbable source—large stones, excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Jung Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Jung, steep, soil—VIIs, nonirrigated; Robson soil—VIIe, nonirrigated; Jung soil—VIIs, nonirrigated
Range site: Jung, steep, soil—024X030N; Robson soil—024X018N; Jung soil—024X030N

3845—Jung-Stingdorn-Atlow association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,100 to 6,100 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Jung very gravelly loam, 8 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—30 percent
• Stingdorn extremely cobbly loam, 30 to 50 percent slopes—Typic Durargids, loamy-skeletal, mixed, mesic, shallow—30 percent
• Atlow very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 15 to 30 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic, shallow—5 percent
• Inclusion 2: Haplic Nadurargids, 4 to 30 percent slopes—Haplic Nadurargids, clayey-skeletal, montmorillonitic, mesic, shallow—4 percent
• Inclusion 3: Rock outcrop—3 percent
• Inclusion 4: Rubble land—3 percent

Characteristics of the Jung Soil

Position on landscape: Crests and shoulder slopes of foothills
Parent material: Kind—residuum; source—altered tuffs

Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
8 to 19 inches—very cobbly clay, very gravelly clay loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; very hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Stingdorn Soil

Position on landscape: South- and west-facing side slopes of foothills
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 7 inches—extremely cobbly loam; 50 to 60 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-2, A-1
7 to 15 inches—very cobbly clay loam; 30 to 50 percent cobbles and stones and 35 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GC; estimated AASHTO classification—A-6
15 to 20 inches—indurated duripan; massive
20 inches—unweathered bedrock

Soil and Water Features

Depth to hardpan: 8 to 20 inches
Depth to bedrock: 8 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.5 to 1.9 inches
Water-supplying capacity: 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Atlow Soil

Position on landscape: North- and east-facing side slopes of foothills
Parent material: Kind—residuum; source—altered tuff
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Black sagebrush, bluegrass

Typical Profile

0 to 3 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
3 to 14 inches—very gravelly clay loam, very cobbly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
14 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.3 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave, east-facing, lower side slopes of foothills
Contrasting features: Very deep
Distinctive present vegetation: Wyoming big sagebrush, Sandberg bluegrass

Inclusion 2
Position on landscape: Convex lower side slopes of foothills
Contrasting features: Sodium-affected subsoil
Distinctive present vegetation: Shadscale, bud sagebrush

Inclusion 3
Position on landscape: Random small peaks and ridges of foothills
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 4
Position on landscape: Rock stripes on side slopes of foothills below rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Jung soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Stingdorn soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Jung Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Stingdorn Soil for Selected Uses
Range seeding: Poor—too arid, droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—depth to bedrock, cemented pan, large stones
Local roads and streets: Severe—depth to bedrock, large stones, slope
Roadfill: Poor—depth to bedrock, large stones, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, cemented pan
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—large stones

Ratings of the Atlow Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Jung soil—VIIs, nonirrigated; Stingdorn soil—VIIs, nonirrigated; Atlow soil—VIIs, nonirrigated
Range site: Jung soil—024X030N; Stingdorn soil—024X002N; Atlow soil—024X030N

3846—Jung-Wiskan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,300 to 7,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 80 days

Composition

Major components:
• Jung very gravelly loam, 15 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—55 percent
• Wiskan very gravelly silt loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—30 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids, 15 to 30 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Havingdon gravelly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—5 percent
• Inclusion 3: Rock outcrop—3 percent
• Inclusion 4: Cumulic Haploxerolls, 15 to 30 percent slopes—Cumulic Haploxerolls, loamy-skeletal, mixed, mesic—2 percent

Characteristics of the Jung Soil

Position on landscape: West- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
8 to 19 inches—very cobbly clay, very gravelly clay loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; very hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Wiskan Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—thin loess mantle over residuum and colluvium; source—various kinds of rock
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Black sagebrush, bluebunch wheatgrass, needlegrass, bluegrass

Typical Profile

0 to 16 inches—very gravelly silt loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); granular structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2, A-4
16 to 28 inches—very gravelly clay loam, very gravelly loam, extremely gravelly clay loam; 10 to 25 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
28 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.4 to 3.0 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: C

Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: South-facing, lower side slopes of mountains
Contrasting features: Deep
Distinctive present vegetation: Wyoming big sagebrush, needlegrass
Inclusion 2
Position on landscape: South-facing, upper side slopes of mountains
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Big sagebrush, needlegrass, bluebunch wheatgrass
Inclusion 3
Position on landscape: Scattered peaks of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 4
Position on landscape: Drainageways of mountains
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Jung soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Wiskan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Jung Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Wiskan Soil for Selected Uses
Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Jung soil—VIIs, nonirrigated; Wiskan soil—VIIs, nonirrigated
Range site: Jung soil—024X030N; Wiskan soil—024X031N

3881—Layview-Packer-Hapgood association

Map Unit Setting

Position on landscape: Mountains
Elevation: 8,000 to 10,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 41 degrees F
Frost-free season: About 45 days

Composition

Major components:
• Layview extremely cobbly loam, 4 to 15 percent slopes—Argic Lithic Cryoborolls, loamy-skeletal, mixed—40 percent
• Packer gravelly loam, 15 to 30 percent slopes—Argic Cryoborolls, loamy-skeletal, mixed—30 percent
• Hapgood gravelly loam, 15 to 30 percent slopes—Pachic Cryoborolls, loamy-skeletal, mixed—15 percent
Contrasting inclusions:
• Inclusion 1: Packer extremely stony loam, 8 to 15 percent slopes—Argic Cryoborolls, loamy-skeletal, mixed—7 percent
• Inclusion 2: Argic Lithic Cryoborolls, 15 to 30 percent slopes—Argic Lithic Cryoborolls, loamy-skeletal, mixed—5 percent
• Inclusion 3: Rock outcrop—2 percent
• Inclusion 4: Rubble land—1 percent

Characteristics of the Layview Soil

Position on landscape: Crests and shoulder slopes of mountains
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—short; shape—convex

Dominant present vegetation: Low sagebrush, black sagebrush, bluegrass, small rabbitbrush

Typical Profile

0 to 3 inches—extremely cobbly loam; 50 to 65 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4

3 to 12 inches—very gravelly loam, very gravelly clay loam; 10 to 15 percent cobbles and stones and 50 to 60 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6

12 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 0.9 to 1.1 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Packer Soil

Position on landscape: Side slopes of mountains
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, bluegrass, Idaho fescue

Typical Profile

0 to 10 inches—gravelly loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4

10 to 21 inches—extremely cobbly clay loam, extremely cobbly loam; 40 to 55 percent cobbles and stones and 55 to 70 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

21 to 60 inches or more—extremely cobbly loam, extremely cobbly sandy loam; 40 to 55 percent cobbles and stones and 55 to 70 percent pebbles (by weight); massive; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 3.6 to 5.4 inches
Water-supplying capacity: 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—3; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Hapgood Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—colluvium influenced by volcanic ash; source—volcanic rock
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, snowberry, Idaho fescue, needlegrass, lupine

Typical Profile

0 to 17 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4

17 to 40 inches—very gravelly loam; 5 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2

40 to 60 inches or more—very cobbly loam, very gravelly loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); massive; soft, very friable; neutral (pH 7.2); nonsaline (less

than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 4.8 to 6.0 inches
Water-supplying capacity: 16 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Shoulders and upper side slopes of mountains
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Black sagebrush, low sagebrush, bluegrass

Inclusion 2
Position on landscape: Concave snow pockets on north-facing side slopes of mountains
Contrasting features: Receives additional moisture from drifted snow
Distinctive present vegetation: Idaho fescue, snowberry

Inclusion 3
Position on landscape: Random small peaks and ridges of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren

Inclusion 4
Position on landscape: Rock stripes on side slopes of mountains below rock outcrop
Contrasting features: More than 90 percent stones on the surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Layview soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Packer soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Hapgood soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Layview Soil for Selected Uses
Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—small stones, depth to bedrock
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Packer Soil for Selected Uses
Range seeding: Fair—erodes easily, small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, large stones

Ratings of the Hapgood Soil for Selected Uses
Range seeding: Fair—erodes easily, small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Interpretive Groups

Capability classification: Layview soil—VIIs, nonirrigated; Packer soil—VIe, nonirrigated; Hapgood soil—VIe, nonirrigated
Range site: Layview soil—024X016N; Packer soil—028B037N; Hapgood soil—024X032N

3950—Hooplite-Jung-Izod association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,200 to 6,600 feet

Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Hooplite very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—50 percent
• Jung very gravelly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—20 percent
• Izod very cobbly loam, 30 to 75 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Xerollic Haplargids, 15 to 30 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—4 percent
• Inclusion 3: Lithic Torriorthents, 30 to 75 percent slopes—Lithic Torriorthents, clayey-skeletal, montmorillonitic (calcareous), mesic—3 percent
• Inclusion 4: Rock outcrop—3 percent

Characteristics of the Hooplite Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—short; shape—smooth or slightly convex
Dominant present vegetation: Black sagebrush, bluegrass, needlegrass, bottlebrush squirreltail, small rabbitbrush

Typical Profile

0 to 4 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
4 to 8 inches—very gravelly loam, very gravelly clay loam; 0 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
8 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 6 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.7 to 0.9 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Jung Soil

Position on landscape: Crests and shoulder slopes of mountains
Parent material: Kind—residuum; source—volcanic rock
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
8 to 19 inches—very cobbly clay, very gravelly clay loam, very cobbly clay loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; very hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GC; estimated AASHTO classification—A-7
19 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7

Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Izod Soil

Position on landscape: East-facing side slopes of mountains
Parent material: Kind—residuum; source—limestone
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, Sandberg bluegrass, bottlebrush squirreltail

Typical Profile

0 to 4 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 60 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, SM, GM-GC, GM; estimated AASHTO classification—A-4, A-2
4 to 10 inches—very gravelly loam, very gravelly fine sandy loam, extremely gravelly sandy loam; 0 to 25 percent cobbles and stones and 50 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GM; estimated AASHTO classification—A-2
10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 7 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.4 to 0.6 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: North-facing side slopes of mountains
Contrasting features: Moderately deep
Distinctive present vegetation: Singleleaf pinyon, Utah juniper
Inclusion 2
Position on landscape: Foot slopes of mountains
Contrasting features: Moderately deep
Distinctive present vegetation: Wyoming big sagebrush, bluegrass
Inclusion 3
Position on landscape: Eroded parts of lower side slopes of mountains
Contrasting features: Thin surface layer
Distinctive present vegetation: Spiny hopsage, black sagebrush
Inclusion 4
Position on landscape: Scattered peaks of mountains
Contrasting features: Bedrock exposed at surface
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Hooplite soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Jung soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Izod soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Hooplite Soil for Selected Uses
Range seeding: Poor—droughty, small stones, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Jung Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Izod Soil for Selected Uses

Range seeding: Poor—droughty, large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Hooplite soil—VIIs, nonirrigated; Jung soil—VIIs, nonirrigated; Izod soil—VIIs, nonirrigated
Range site: Hooplite soil—024X030N; Jung soil—024X030N; Izod soil—024X030N

3961—Pineval-Orovada-Beoska association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,200 to 5,900 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Pineval very cobbly loam, 2 to 8 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, mesic—35 percent
• Orovada cobbly fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—30 percent
• Beoska very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Typic Camborthids, 15 to 30 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 2: Xerollic Haplargids, 15 to 30 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—4 percent
• Inclusion 3: Settlemeyer fine sandy loam, drained, 0 to 4 percent slopes—Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic—2 percent

Characteristics of the Pineval soil

Position on landscape: Upper summits of fan piedmont remnants
Parent material: Gravelly mixed alluvium
Slope features: Length—short; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, small rabbitbrush

Typical Profile

0 to 5 inches—very cobbly loam; 30 to 40 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
5 to 11 inches—very gravelly loam, very gravelly clay loam; 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
11 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly sandy loam; 50 to 80 percent pebbles (by weight); single grained; loose; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 4); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 3.0 to 4.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Orovada Soil

Position on landscape: Inset fans
Parent material: Loess influenced by volcanic ash over mixed alluvium
Slope features: Length—short; shape—concave

Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Indian ricegrass, small rabbitbrush, bottlebrush squirreltail

Typical Profile

0 to 8 inches—cobbly fine sandy loam; 25 to 35 percent cobbles and stones and 10 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4

8 to 26 inches—loam, fine sandy loam; 5 to 20 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

26 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 20 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential frost action: Moderate

Characteristics of the Beoska Soil

Position on landscape: Lower summits of fan piedmont remnants
Parent material: Loess over loamy and gravelly mixed alluvium
Slope features: Length—short; shape—smooth to slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical Profile

0 to 13 inches—very fine sandy loam; 5 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

13 to 24 inches—silty loam, silty clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 25 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

24 to 55 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); strongly saline (16 to 30 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

55 to 60 inches or more—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: In the upper 24 inches—moderately slow; below this depth—moderately rapid
Available water capacity: 7.9 to 9.8 inches
Water-supplying capacity: 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, south-facing side slopes of fan piedmont remnants
Contrasting features: Slopes of 15 to 30 percent
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage, shadscale, bluegrass

Inclusion 2
Position on landscape: North-facing side slopes of fan piedmont remnants
Contrasting features: Slopes of 15 to 30 percent

Distinctive present vegetation: Wyoming big sagebrush, bluegrass, needlegrass

Inclusion 3

Position on landscape: Upper part of inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:

Suitability of the Pineval soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings of the Pineval Soil for Selected Uses

Range seeding: Poor—large stones
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action, flooding
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage

Ratings of the Orovada Soil for Selected Uses

Range seeding: Fair—too arid, large stones
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Beoska Soil for Selected Uses

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Pineval soil—VIIs, nonirrigated; Orovada soil—VIIs, nonirrigated; Beoska soil—IIIe, irrigated, and VIIs, nonirrigated
Range site: Pineval soil—024X005N; Orovada soil—024X005N; Beoska soil—024X002N

3990—Settlemeyer fine sandy loam, drained, 0 to 4 percent slopes

Map Unit Setting

Position on landscape: Inset fans
Elevation: 5,000 to 6,300 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 110 days

Composition

Major components:

• Settlemeyer fine sandy loam, drained, 0 to 4 percent slopes—Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic—85 percent

Contrasting inclusions:

• Inclusion 1: Xeric Torriorthents, 0 to 4 percent slopes—Xeric Torriorthents, fine-loamy, mixed (calcareous), mesic—7 percent
• Inclusion 2: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—7 percent
• Inclusion 3: Settlemeyer fine sandy loam, 0 to 2 percent slopes, frequently flooded—Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic—1 percent

Characteristics of the Settlemeyer Soil

Position on landscape: Entrenched inset fans along drainageways of foothills and mountains
Parent material: Mixed alluvium
Slope features: Length—short; shape—concave
Dominant present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye

Typical Profile

0 to 10 inches—fine sandy loam; platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, SM; estimated AASHTO classification—A-4

10 to 36 inches—silt loam, silty clay loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

36 to 60 inches or more—fine sandy loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: December through March—36 to 48 inches; rest of year—below 48 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 9.4 to 11.0 inches
Water-supplying capacity: 12 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Areas adjacent to channels
Contrasting features: Slightly saline
Distinctive present vegetation: Basin big sagebrush, black greasewood, basin wildrye

Inclusion 2
Position on landscape: Fanlettes from adjacent foothills
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Inclusion 3
Position on landscape: Flood plains of inset fans
Contrasting features: Poorly drained
Distinctive present vegetation: Creeping wildrye, basin wildrye, rush, sedge

Major Uses

Current uses: Rangeland, wildlife habitat, nonirrigated cropland

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—fair; shallow water areas—poor

Ratings of the Settlemeyer Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—frost action, low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Moderate—wetness

Interpretive Groups

Capability classification: Settlemeyer soil—IIw, irrigated, and VIw, nonirrigated
Range site: Settlemeyer soil—025X003N

3992—Settlemeyer, drained-Settlemeyer loams

Map Unit Setting

Position on landscape: Inset fans
Elevation: 5,000 to 6,300 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Settlemeyer loam, drained, 2 to 4 percent slopes—Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic—65 percent
• Settlemeyer loam, 0 to 2 percent slopes, frequently flooded—Fluvaquentic Haplaquolls, fine-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 2 to 8 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—9 percent
• Inclusion 2: Xeric Torriorthents, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—6 percent

Characteristics of the Settlemeyer, Drained, Soil

Position on landscape: Entrenched inset fans along intermountain drainageways and foothills
Parent material: Mixed alluvium
Slope features: Length—short; shape—concave
Dominant present vegetation: Basin big sagebrush, rubber rabbitbrush, basin wildrye

Typical Profile

0 to 16 inches—loam; platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL, CL-ML; estimated AASHTO classification—A-4, A-6

16 to 40 inches—silt loam, silty clay loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

40 to 60 inches or more—fine sandy loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: December through March—36 to 48 inches; rest of year—below 48 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 9.4 to 11.0 inches
Water-supplying capacity: 12 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Characteristics of the Settlemeyer Soil

Position on landscape: Flood plains of inset fans along drainageways of mountains and foothills
Parent material: Mixed alluvium
Slope features: Length—short; shape—concave
Dominant present vegetation: Creeping wildrye, sedge, rush, basin wildrye

Typical Profile

0 to 15 inches—loam; platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL; estimated AASHTO classification—A-6

15 to 35 inches—silty clay loam, clay loam; massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL; estimated AASHTO classification—A-6

35 to 60 inches or more—stratified very gravelly loamy sand to silty clay loam; 15 to 40 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CL-ML, GM-GC, GC, CL; estimated AASHTO classification—A-4, A-6

Soil and Water Features

Depth to seasonal high water table: December through May—12 to 36 inches; rest of year—below 36 inches
Flooding: Frequency—frequent; duration—brief; months—December to March
Permeability: Moderately slow
Available water capacity: 11.0 to 13.0 inches
Water-supplying capacity: 15 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Overplaced fanlettes and foot slopes from adjacent mountain front
Contrasting features: Very gravelly throughout the profile
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, bluegrass

Inclusion 2
Position on landscape: Areas adjacent to abandoned stream channels
Contrasting features: Very gravelly throughout the profile
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, nonirrigated cropland

Wildlife habitat elements:
Suitability of the Settlemeyer, drained, soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—poor; shallow water areas—very poor
Suitability of the Settlemeyer soil for named elements: Grain and seed crops (irrigated)—fair; domestic

grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—good; shallow water areas—good

Ratings of the Settlemeyer, Drained, Soil for Selected Uses

Range seeding: Fair—too arid
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—frost action, low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Moderate—wetness

Ratings of the Settlemeyer Soil for Selected Uses

Range seeding: Good
Daily cover for landfill: Poor—wetness
Shallow excavations: Severe—wetness, cutbanks cave
Local roads and streets: Severe—frost action, low strength, flooding
Roadfill: Fair—wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, too clayey, area reclaim
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—wetness, piping

Interpretive Groups

Capability classification: Settlemeyer, drained, soil—IIw, irrigated, and VIw, nonirrigated; Settlemeyer soil—IIIw, irrigated, and Vw, nonirrigated
Range site: Settlemeyer, drained, soil—025X003N; Settlemeyer soil—025X001N

4051—Attella-Xine-Kram association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Attella very gravelly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid—45 percent
• Xine gravelly loam, 30 to 50 percent slopes—Aridic Calcixerolls, loamy-skeletal, mixed, frigid—30 percent
• Kram very cobbly loam, 15 to 30 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—5 percent
• Inclusion 2: Durorthidic Xeric Torriorthents, 2 to 8 percent slopes—Durorthidic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Attella Soil

Position on landscape: East-, west-, and upper south-facing side slopes of mountains
Parent material: Kind—colluvium and residuum; source—dolomite
Slope features: Length—short; shape—convex
Dominant present vegetation: Singleleaf pinyon, Wyoming big sagebrush, bluegrass, Utah juniper
Surface cover: 80 percent pebbles, 5 percent flagstones

Typical Profile

0 to 3 inches—very gravelly loam; 5 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
3 to 7 inches—very gravelly loam, very gravelly silt loam; 5 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
7 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 6 to 10 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 0.7 to 1.0 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Xine Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—colluvium over residuum; source—limestone and calcareous shale
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, Idaho fescue, bluebunch wheatgrass
Surface cover: 15 percent pebbles

Typical Profile

0 to 10 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); granular structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
10 to 33 inches—very cobbly loam, very cobbly sandy loam; 35 to 50 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2, A-4
33 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 20 to 40 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 3.5 to 4.2 inches
Water-supplying capacity: 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Kram Soil

Position on landscape: South-facing, lower side slopes of mountains
Parent material: Kind—residuum; source—limestone
Slope features: Length—short; shape—convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper, bluegrass, black sagebrush
Surface cover: 25 percent pebbles, 15 percent cobbles, 2 percent stones

Typical Profile

0 to 4 inches—very cobbly loam; 35 to 45 percent cobbles and stones and 30 to 45 percent pebbles (by weight); granular structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4
4 to 13 inches—very gravelly very fine sandy loam, very gravelly loam; 10 to 15 percent cobbles and stones and 45 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
13 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.0 to 1.2 inches
Water-supplying capacity: 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Random small peaks and severely eroded side slopes of mountains
Contrasting features: Bedrock exposed at the soil surface
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Entrenched drainageways and inset fan remnants
Contrasting features: Slopes of 2 to 8 percent, receives additional moisture from runoff
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, woodland

Woodland on the Attella soil:
Site index for common trees: Singleleaf pinyon—40; Utah juniper—40
Most important native understory plants: Mountain big sagebrush, bluegrass

Woodland on the Kram soil:
Site index for common trees: Singleleaf pinyon—25; Utah juniper—25
Most important native understory plants: Black sagebrush, bluegrass, ephedra

Wildlife habitat elements:
Suitability of the Attella soil for named elements: Wild herbaceous plants (nonirrigated)—poor; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Xine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Kram soil for named elements: Wild herbaceous plants (nonirrigated)—poor; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Attella Soil for Selected Uses
Range seeding: Poor—droughty, small stones, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Xine Soil for Selected Uses
Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, small stones
Pond reservoir areas: Severe—slope, seepage
Embankments, dikes, and levees: Severe—large stones

Ratings of the Kram Soil for Selected Uses
Range seeding: Poor—droughty, small stones, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Attella soil—VIIs, nonirrigated; Xine soil—VIIe, nonirrigated; Kram soil—VIIs, nonirrigated
Woodland suitability group: Attella soil—1R; Kram soil—1X
Range site: Attella soil—025X062N; Xine soil—024X021N; Kram soil—025X063N

4070—Genaw-Wieland-Grina association

Map Unit Setting

Position on landscape: Fan piedmonts and foothills
Elevation: 5,700 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 105 days

Composition

Major components:
• Genaw gravelly loam, 15 to 30 percent slopes—Xerollic Haplargids, loamy, mixed, mesic, shallow—35 percent
• Wieland gravelly loam, 4 to 15 percent slopes—Durixerollic Haplargids, fine, montmorillonitic, mesic—30 percent
• Grina very gravelly loam, 15 to 30 percent slopes, eroded—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids, 2 to 8 percent slopes—Durixerollic Camborthids, fine-loamy, mixed, mesic—8 percent
• Inclusion 2: Typic Natrargids, 8 to 15 percent slopes—Typic Natrargids, fine, montmorillonitic, mesic—4 percent
• Inclusion 3: Durixerollic Camborthids, 2 to 4 percent slopes—Durixerollic Camborthids, fine-loamy, mixed, mesic—3 percent

Characteristics of the Genaw Soil

Position on landscape: Side slopes of foothills and fan piedmont remnants with a rock core

Parent material: Kind—loess mantled residuum; source—tuffaceous sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, spiny hopsage

Typical Profile

0 to 6 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GM-GC, SM-SC; estimated AASHTO classification—A-4
6 to 11 inches—gravelly loam, gravelly clay loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6
11 to 16 inches—gravelly sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 45 to 65 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
16 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Wieland Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—short; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, needlegrass, bluegrass

Typical Profile

0 to 8 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL, SC; estimated AASHTO classification—A-6
8 to 20 inches—gravelly clay, clay; 0 to 5 percent cobbles and stones and 10 to 45 percent pebbles (by weight); prismatic structure; hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—CH, SC; estimated AASHTO classification—A-7
20 to 60 inches or more—loam, gravelly loam, gravelly sandy loam; 0 to 5 percent cobbles and stones and 10 to 45 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline to slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4, A-2

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Slow
Available water capacity: 5.7 to 9.2 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Grina Soil

Position on landscape: Side slopes of foothills and fan piedmont remnants with a rock core
Parent material: Kind—residuum; source—tuffaceous sediments
Slope features: Length—short; shape—concave
Dominant present vegetation: Wyoming big sagebrush, bluegrass, small rabbitbrush, Utah juniper

Typical Profile

0 to 3 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 55 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated

Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

3 to 14 inches—loam, silty clay loam, silt loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

14 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.7 to 2.5 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave inset fans on fan piedmont remnants
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 2
Position on landscape: Concave side slopes of fan piedmont remnants
Contrasting features: 10 to 30 percent eroded surface layer
Distinctive present vegetation: Big sagebrush, Indian ricegrass, rabbitbrush, galleta

Inclusion 3
Position on landscape: Concave inset fans at base of foothills
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Basin wildrye, basin big sagebrush, black greasewood, rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Grina soil:
Site index for common trees: Utah juniper—18
Most important native understory plants: Wyoming big sagebrush, ephedra, bluegrass

Wildlife habitat elements:
Suitability of the Genaw soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Wieland soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Grina soil for named elements: Wild herbaceous plants (nonirrigated)—poor; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Genaw Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Wieland Soil for Selected Uses
Range seeding: Poor—rooting depth
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey, slope
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer

Ratings of the Grina Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope
Roadfill: Poor—depth to bedrock, slope, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Genaw soil—VIIe, nonirrigated;

Wieland soil—VIs, nonirrigated; Grina soil—VIIe, nonirrigated
Range site: Genaw soil—024X005N; Wieland soil—024X005N; Grina soil—025X059N
Woodland suitability group: Grina soil—1D

4071—Genaw-Perlor-Puett association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Genaw very fine sandy loam, 4 to 15 percent slopes—Xerollic Haplargids, loamy, mixed, mesic, shallow—35 percent
• Perlor very fine sandy loam, 4 to 15 percent slopes—Typic Torriorthents, loamy, mixed (calcareous), mesic, shallow—30 percent
• Puett very gravelly loam, 15 to 50 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids, 4 to 15 percent slopes—Xerollic Haplargids, loamy, mixed, mesic—5 percent
• Inclusion 2: Xerollic Camborthids, 2 to 8 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Xerollic Haplargids, 4 to 15 percent slopes—Xerollic Haplargids, loamy, mixed, mesic, shallow—5 percent

Characteristics of the Genaw Soil

Position on landscape: Side slopes of foothills
Parent material: Kind—loess mantled residuum; source—tuffaceous sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, spiny hopsage
Surface cover: 5 percent pebbles, 5 percent cobbles

Typical Profile

0 to 6 inches—very fine sandy loam; 5 to 15 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, SM; estimated AASHTO classification—A-4
6 to 11 inches—gravelly loam, gravelly clay loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6
11 to 16 inches—gravelly sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 40 to 65 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
16 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.49; T value—1; wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Perlor Soil

Position on landscape: South-facing shoulder slopes of foothills
Parent material: Kind—residuum influenced by loess; source—tuffaceous sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Surface cover: 10 percent pebbles

Typical Profile

0 to 7 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 20 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
7 to 14 inches—loam, sandy loam, very gravelly sandy loam; 0 to 5 percent cobbles and stones and 5 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH

8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

14 inches or more—weathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.6 to 2.6 inches
Water-supplying capacity: 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Low

Characteristics of the Puett Soil

Position on landscape: Deeply incised side slopes of foothills
Parent material: Kind—loamy residuum; source—soft, tuffaceous sedimentary formations
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, Wyoming big sagebrush, Utah juniper

Typical Profile

0 to 4 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-1

4 to 15 inches—coarse sandy loam, gravelly sandy loam, loam; 10 to 50 percent pebbles (by weight); massive; soft, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML, GM; estimated AASHTO classification—A-1, A-2, A-4

15 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1.7 to 2.1 inches
Water-supplying capacity: 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex toe slopes of foothills
Contrasting features: Very deep
Distinctive present vegetation: Wyoming big sagebrush, bluegrass, spiny hopsage

Inclusion 2
Position on landscape: Inset fans
Contrasting features: Receives additional moisture from runoff
Distinctive present vegetation: Wyoming big sagebrush, needlegrass, bluegrass

Inclusion 3
Position on landscape: Convex, north-facing side slopes and shoulder slopes of foothills
Contrasting features: Layer of lime accumulation at a depth of 5 inches
Distinctive present vegetation: Black sagebrush, rabbitbrush, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Genaw soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Perlor soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Puett soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Genaw Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Moderate—slope, depth to bedrock, frost action
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope

Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Perlor Soil for Selected Uses
Range seeding: Poor—droughty, too arid
Daily cover for landfill: Poor—depth to bedrock
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Moderate—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Puett Soil for Selected Uses
Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—seepage, piping

Interpretive Groups

Capability classification: Genaw soil—VIIs, nonirrigated; Perlor soil—VIIs, nonirrigated; Puett soil—VIIs, nonirrigated
Range site: Genaw soil—024X020N; Perlor soil—024X002N; Puett soil—025X025N

4072—Genaw-Orovada-Puett association

Map Unit Setting

Position on landscape: Hills
Elevation: 5,600 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Composition

Major components:
• Genaw very fine sandy loam, 4 to 15 percent slopes—Xerollic Haplargids, loamy, mixed, mesic, shallow—40 percent
• Orovada fine sandy loam, 2 to 8 percent slopes, rarely flooded—Durixerollic Camborthids, coarse-loamy, mixed, mesic—30 percent
• Puett fine sandy loam, 15 to 30 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—15 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 15 to 50 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—6 percent
• Inclusion 2: Xerollic Haplargids, 15 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic, shallow—5 percent
• Inclusion 3: Xeric Torriorthents, 4 to 15 percent slopes—Xeric Torriorthents, sandy, mixed, mesic—4 percent

Characteristics of the Genaw Soil

Position on landscape: Side slopes of hills
Parent material: Kind—loess mantled residuum; source—tuffaceous sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Typical Profile

0 to 6 inches—very fine sandy loam; 5 to 15 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, SM; estimated AASHTO classification—A-4
6 to 11 inches—gravelly loam, gravelly clay loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6
11 to 16 inches—gravelly sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 40 to 65 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
16 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D

Erosion factors (surface layer): K value—.49; T value—1; wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Orovada Soil

Position on landscape: Inset fans
Parent material: Loess capped mixed alluvium
Slope features: Length—short; shape—smooth to concave
Dominant present vegetation: Wyoming big sagebrush, small rabbitbrush, Sandberg bluegrass, littleleaf horsebrush

Typical Profile

0 to 8 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
8 to 20 inches—loam, fine sandy loam; 5 to 25 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
20 to 60 inches or more—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); slightly saline to moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and Water Features

Depth to seasonal high water table: More than 60 inches
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: 9 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Characteristics of the Puett Soil

Position on landscape: Deeply incised side slopes of hills
Parent material: Kind—loamy residuum; source—soft, tuffaceous sedimentary formations
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, Wyoming big sagebrush, invading Utah juniper

Typical Profile

0 to 4 inches—fine sandy loam; 5 to 15 pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4
4 to 15 inches—coarse sandy loam, sandy loam, fine sandy loam; 5 to 25 percent pebbles (by weight); massive; soft, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-1, A-2, A-4
15 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 10 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately rapid
Available water capacity: 1.8 to 2.2 inches
Water-supplying capacity: 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—3
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, south-facing erosional side slopes of hills
Contrasting features: Soft bedrock at a depth of 4 to 10 inches
Distinctive present vegetation: Wyoming big sagebrush, shadscale, galleta, bluegrass, needlegrass
Inclusion 2
Position on landscape: Concave, north-facing back slopes of hills
Contrasting features: Very gravelly throughout the profile
Distinctive present vegetation: Black sagebrush, small rabbitbrush, bluegrass

Inclusion 3
Position on landscape: Dunes overplacing the base of hills
Contrasting features: Sandy throughout the profile
Distinctive present vegetation: Spiny hopsage, wheatgrass, Indian ricegrass, Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Genaw soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Orovada soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Puett soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings of the Genaw Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Moderate—slope, depth to bedrock, frost action
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Orovada Soil for Selected Uses
Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action, flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings of the Puett Soil for Selected Uses
Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—seepage, piping

Interpretive Groups

Capability classification: Genaw soil—VIIs, nonirrigated; Orovada soil—IIIe, irrigated, and VIc, nonirrigated; Puett soil—VIIe, nonirrigated
Range site: Genaw soil—028B010N; Orovada soil—028B010N; Puett soil—025X025N

4091—Coztur-Genaw association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 6,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 46 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Coztur loam, 2 to 8 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, frigid—50 percent
• Genaw very fine sandy loam, 4 to 15 percent slopes—Xerollic Haplargids, loamy, mixed, mesic, shallow—35 percent
Contrasting inclusions:
• Inclusion 1: Puett very gravelly loam, 30 to 50 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—6 percent
• Inclusion 2: Xerollic Haplargids, 4 to 15 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—6 percent
• Inclusion 3: Durixerollic Camborthids, 2 to 8 percent slopes—Durixerollic Camborthids, fine-loamy, mixed, frigid—3 percent

Characteristics of the Coztur Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum; source—volcanic rock, rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming and mountain big sagebrush, bluegrass, needlegrass, Utah juniper
Surface cover: 10 percent pebbles

Typical Profile

0 to 11 inches—loam; 10 to 20 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2);

estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4

11 to 17 inches—loam, clay loam; 5 to 15 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6

17 inches or more—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.6 to 3.4 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Genaw Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—loess mantled residuum; source—tuffaceous sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluegrass, spiny hopsage

Typical Profile

0 to 6 inches—very fine sandy loam; 5 to 15 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—SM-SC, SM; estimated AASHTO classification—A-4

6 to 11 inches—gravelly loam, gravelly clay loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 5); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6

11 to 16 inches—gravelly sandy loam, very gravelly loam; 0 to 5 percent cobbles and stones and 40 to 65 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 10); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

16 inches—weathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderate
Available water capacity: 1.9 to 2.4 inches
Water-supplying capacity: 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.49; T value—1; wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex erosion ballenas on side slopes of mountains
Contrasting features: 10 to 25 percent eroded areas
Distinctive present vegetation: Wyoming big sagebrush, black sagebrush, Utah juniper

Inclusion 2
Position on landscape: Shoulders and convex upper side slopes of hills
Contrasting features: Bedrock at a depth of 20 to 30 inches
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Inclusion 3
Position on landscape: Drainageways of mountains
Contrasting features: Bedrock at a depth of more than 60 inches
Distinctive present vegetation: Wyoming and mountain big sagebrush, needlegrass, bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability of the Coztur soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Genaw soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Coztur Soil for Selected Uses
Range seeding: Fair—droughty, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock

Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock
Pond reservoir areas: Severe—depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Genaw Soil for Selected Uses

Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Moderate—slope, depth to bedrock, frost action
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Coztur soil—VIIs, nonirrigated; Genaw soil—VIIs, nonirrigated
Range site: Coztur soil—025X014N; Genaw soil—024X005N

4093—Coztur-Teguro-Punchbowl association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,300 to 6,600 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 90 days

Composition

Major components:
• Coztur gravelly loam, 8 to 15 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, frigid—50 percent
• Teguro very gravelly loam, 15 to 50 percent slopes—Lithic Argixerolls, loamy, mixed, frigid—20 percent
• Punchbowl gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Haplargids, 4 to 15 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, frigid—8 percent
• Inclusion 2: Lithic Xerollic Haplargids, 50 to 75 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—4 percent
• Inclusion 3: Durixerollic Haplargids, 8 to 15 percent slopes—Durixerollic Haplargids, loamy-skeletal, mixed, frigid—3 percent

Characteristics of the Coztur Soil

Position on landscape: Upper crests and side slopes of mountains
Parent material: Kind—residuum; source—volcanic rock, rhyolitic tuff
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, mountain big sagebrush, bluegrass, needlegrass, Utah juniper

Typical Profile

0 to 11 inches—gravelly loam; 25 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-2, A-4
11 to 17 inches—loam, clay loam; 5 to 15 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
17 inches or more—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.6 to 3.4 inches
Water-supplying capacity: 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Teguro Soil

Position on landscape: North- and east-facing shoulders and upper side slopes of mountains
Parent material: Kind—residuum; source—tuff
Slope features: Length—short; shape—slightly concave to irregular
Dominant present vegetation: Utah juniper, Idaho

fescue, mountain big sagebrush, pine bluegrass, singleleaf pinyon

Typical Profile

0 to 6 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

6 to 16 inches—gravelly clay loam, gravelly loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-2, A-6

16 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 14 to 20 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 2.0 to 2.6 inches
Water-supplying capacity: 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: Moderate

Characteristics of the Punchbowl Soil

Position on landscape: Lower crests and side slopes of mountains
Parent material: Kind—residuum; source—andesite and rhyolite
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, small rabbitbrush, bluegrass, phlox, singleleaf pinyon, Utah juniper

Typical Profile

0 to 3 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4, A-2

3 to 6 inches—gravelly loam, loam; 0 to 5 percent cobbles and stones and 5 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC, CL, GC; estimated AASHTO classification—A-6

6 to 10 inches—gravelly clay loam, gravelly sandy clay loam; 0 to 5 percent cobbles and stones and 40 to 50 percent pebbles (by weight); angular blocky structure; hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-6, A-7

10 inches—unweathered bedrock

Soil and Water Features

Depth to bedrock: 8 to 14 inches
Depth to seasonal high water table: More than 60 inches
Frequency of flooding: None
Permeability: Moderately slow
Available water capacity: 1.2 to 1.6 inches
Water-supplying capacity: 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave toe slopes and inset fans
Contrasting features: Very deep
Distinctive present vegetation: Wyoming big sagebrush, mountain big sagebrush, bluegrass, basin wildrye

Inclusion 2
Position on landscape: Convex scarps adjacent to inset fans
Contrasting features: Lower water-supplying capacity
Distinctive present vegetation: Wyoming big sagebrush, shadscale, needlegrass, bluegrass

Inclusion 3
Position on landscape: Scattered shoulder slopes of adjacent hills
Contrasting features: Limestone parent material
Distinctive present vegetation: Utah juniper, Wyoming big sagebrush, bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Woodland on the Teguro soil:
Site index for common trees: Singleleaf pinyon—55; Utah juniper—55
Most important native understory plants: Wyoming big sagebrush, bluebunch wheatgrass

Wildlife habitat elements:
Suitability of the Coztur soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Teguro soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—fair
Suitability of the Punchbowl soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings of the Coztur Soil for Selected Uses
Range seeding: Fair—droughty, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Teguro Soil for Selected Uses
Range seeding: Poor—droughty, small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings of the Punchbowl Soil for Selected Uses
Range seeding: Poor—droughty, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups
Capability classification: Coztur soil—VIIs, nonirrigated; Teguro soil—VIIs, nonirrigated; Punchbowl soil—VIIe, nonirrigated
Range site: Coztur soil—025X014N; Teguro soil—025X062N; Punchbowl soil—024X030N
Woodland suitability group: Teguro soil—2R

4140—Welch loam, drained, 2 to 8 percent slopes

Map Unit Setting
Position on landscape: Inset fans
Elevation: 6,500 to 8,200 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free season: About 80 days

Composition
Major components:
• Welch loam, drained, 2 to 8 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed, frigid—90 percent
Contrasting inclusions:
• Inclusion 1: Cumulic Haploxerolls, 2 to 8 percent slopes—Cumulic Haploxerolls, fine-loamy, mixed, frigid—6 percent
• Inclusion 2: Welch loam, 2 to 8 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed, frigid—4 percent

Characteristics of the Welch Soil
Position on landscape: Slightly entrenched inset fans in narrow mountain valleys
Parent material: Mixed alluvium
Slope features: Length—short; shape—slightly concave

Typical Profile

0 to 4 inches—loam; 0 to 5 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
4 to 60 inches—stratified sandy loam to silty clay loam; 0 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and Water Features

Depth to seasonal high water table: March through June—48 to 72 inches; rest of year—below 72 inches
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: 9.6 to 12 inches
Water-supplying capacity: 13 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Toe slopes adjacent to inset fans
Contrasting features: Moderately well drained
Distinctive present vegetation: Chokecherry, aspen, willow, rose, bluegrass
Inclusion 2
Position on landscape: Unentrenched, smooth flood plains of inset fans
Contrasting features: Frequently flooded
Distinctive present vegetation: Creeping wildrye, alpine timothy, hairgrass, rush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements:
Suitability for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair

Ratings of the Welch Soil for Selected Uses
Range seeding: Good
Daily cover for landfill: Fair—too clayey
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Slight
Embankments, dikes, and levees: Slight

Interpretive Groups

Capability classification: IIIw, irrigated, and VIw, nonirrigated
Range site: 025X003N

Prime Farmland

In this section, prime farmland is defined and discussed and the prime farmland soils in this survey area are listed.

Prime farmland is of major importance in meeting the nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to producing food, seed, forage, fiber, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. The soils need only to be treated and managed using acceptable farming methods. Adequate moisture and a sufficiently long growing season are required. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources, and farming these soils results in the least damage to the environment.

Prime farmland soils either are used for producing food or fiber or are available for these uses. Urban or built-up land and water areas cannot be considered prime farmland.

Prime farmland soils commonly get an adequate and dependable supply of moisture from precipitation or irrigation. Temperature and growing season are favorable, and the level of acidity or alkalinity is acceptable. The soils have few, if any, rocks, and are permeable to water and air. They are not excessively erodible or saturated with water for long periods, and are not flooded during the growing season. The slope ranges mainly from 0 to 6 percent.

Soils that have a high water table, are subject to flooding, or are droughty may qualify as prime farmland soils if the limitations are overcome by drainage, flood control, or irrigation. Onsite evaluation is necessary to determine the effectiveness of corrective measures. More information on the criteria for prime farmland soils can be obtained at the local office of the Soil Conservation Service.

A recent trend in land use has been the conversion of prime farmland to urban and industrial uses. The loss of prime farmland to other uses puts pressure on lands that are less productive than prime farmland.

The following map units meet the soil requirements for prime farmland when irrigated. On some soils included in the list, measures should be used to overcome a hazard or limitation, such as flooding, wetness, or droughtiness. The location of each map unit is shown on the detailed soil maps at the back of this publication. Soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

The following map units or soils are prime farmland if irrigated:

140	Antel silt loam
141	Antel silt loam, moderately sodic
142	Antel silty clay loam
143	Antel silty clay loam, occasionally flooded
162	Batan silt loam, occasionally flooded
163	Batan silt loam, slightly saline
2066	Broyles and Dun Glen parts of Oxcorel-Broyles-Dun Glen association
213	Broyles part of Blacka-Broyles very fine sandy loam, saline, 2 to 4 percent slopes
1144	Broyles part of Wendane-Batan-Broyles association
232	Broyles very fine sandy loam, cemented substratum, 0 to 2 percent slopes
233	Broyles very fine sandy loam, moderately saline, 0 to 2 percent slopes
230	Broyles very fine sandy loam, 0 to 2 percent slopes
231	Broyles very fine sandy loam, 2 to 4 percent slopes
235	Broyles-Creemon association
247	Bubus part of Bubus-Isolde association
442	Bubus part of Gund-Bubus-Wendane association
1092	Bubus part of Tulase-Bubus-McConnel association

240	Bubus very fine sandy loam
242	Bubus very fine sandy loam, gravelly substratum
244	Bubus-Relley complex
2600	Caniwe part of Grina-Caniwe-Handy association
2602	Caniwe part of Grina-Grina, eroded-Caniwe association
298	Creemon part of Creemon-Misad association
605	Creemon part of Misad-Creemon-Rednik association
292	Creemon silt loam, 0 to 2 percent slopes, occasionally flooded
290	Creemon silt loam, 0 to 2 percent slopes
291	Creemon silt loam, 2 to 4 percent slopes
295	Creemon-Cren association
296	Creemon-Hessing association
294	Creemon-Orovada-Broyles association
297	Creemon-Orovada-Tulase association
304	Cren and Raglan parts of Cren-Raglan-Batan association
303	Cren and Relley parts of Cren-Doowak-Relley association
300	Cren silt loam
310	Davey fine sandy loam
312	Davey fine sandy loam, cemented substratum
313	Davey part of Davey-Goldrun complex
3661	Dun Glen part of Dun Glen-Whirlo association
511	Hessing silt loam
512	Hessing-Relley association
3742	Kelk part of Kelk-Ocala association
3740	Kelk silt loam, saline, 0 to 4 percent slopes
3741	Kelk-Settlemeyer association
245	Needle Peak and Yipor parts of Bubus-Needle Peak-Yipor association
660	Needle Peak silt loam, occasionally flooded
702	Orovada fine sandy loam, cemented substratum, 0 to 2 percent slopes
700	Orovada fine sandy loam, 0 to 2 percent slopes
701	Orovada fine sandy loam, 2 to 4 percent slopes
703	Orovada part of Orovada-Goldrun complex
805	Raglan silt loam
800	Raglan silt loam, gravelly substratum
2640	Rasille-Kelk association
850	Relley silt loam
851	Relley silt loam, cemented substratum
853	Relley silty clay loam
855	Relley-Broyles association
3990	Settlemeyer fine sandy loam, drained, 0 to 4 percent slopes
2575	Settlemeyer part of Colbar-Perwick-Settlemeyer association
1146	Sonoma and Valmy parts of Wendane-Sonoma-Valmy association
990	Sonoma silt loam, drained
631	Tulase part of McConnel-Tulase association
1142	Tweba part of Wendane-Tweba association
1102	Tweba very fine sandy loam, drained, 0 to 4 percent slopes
167	Valmy part of Batan-Wendane-Valmy association
1150	Weso fine sandy loam
182	Whirlo part of Beoska-Whirlo-Misad association
2068	Whirlo part of Oxcorel-Golconda-Whirlo association
1280	Whirlo part of Ricert-Oxcorel-Whirlo association
1166	Whirlo part of Whirlo-Pumper complex
1162	Whirlo silt loam, 0 to 2 percent slopes
1163	Whirlo silt loam, 2 to 4 percent slopes
1165	Whirlo-Creemon association
1170	Wholan silt loam
1174	Wholan silt loam, sandy substratum
1178	Wholan-Rasille association
1177	Wholan, strongly alkaline-Rasille association

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

The system of land capability classification used by the Soil Conservation Service is explained in this section, and general management needed for crops and pasture is suggested.

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*,

w, s, or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

Planners of management systems for individual fields or farms in the survey area should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

The aim of good land use is to produce the greatest amount of the most desirable crops while also protecting and improving the soil. This can be achieved by seeding plants that are well suited to the soil and by applying proper management practices that protect the soil and maintain soil tilth.

Different management is needed on diverse kinds of soil. Basic essential practices, however, apply to all cultivated soils. These practices are discussed in the following paragraphs.

Conservation cropping system. A conservation cropping system consists of a crop rotation and cultural and management practices that protect the soil from erosion and maintain or improve fertility and tilth. It should include perennial legumes, grass-legume mixtures, or other crops that produce large quantities of residue to compensate for crops in the rotation that produce little or no residue.

A typical cropping system used in the survey area is 8 to 10 years of alfalfa followed by 2 years of small grain. Residue from small grain is returned to the soil, and tillage is kept to a minimum.

Erosion control. Protection of the surface layer from water erosion and wind erosion is important because this layer contains most of the organic matter and is generally more fertile than the rest of the soil. Wind erosion can be controlled by leaving a protective plant cover on the surface, by using minimum tillage during windy or stormy periods, and by tilling in spring and then immediately seeding. Water erosion generally is controlled by leveling and by applying irrigation water at the proper rate.

Application of plant nutrients. Most crops in the survey area respond well to applications of liquid or solid fertilizer. Specific fertilizer requirements are based on the kind of crop grown and the nutrient level of the soil. Applications of nitrogen and phosphorus increase the production of small grain and aid in establishing alfalfa. Unless the soils contain sufficient amounts of available phosphorus, established alfalfa generally requires only applications of phosphorus, which should be applied every 2 years throughout the duration of the stand.

Irrigation water management. Proper irrigation water management is the application of irrigation water at rates and in amounts adequate to produce high crop yields and to minimize soil and water losses. Water is applied according to the crop needs and the characteristics of the soil.

An efficient irrigation distribution system is one that has enough capacity to meet the needs of the crops grown during periods of peak use. The system should be located and controlled so that seepage losses are minimal and so that it carries the required flow without causing erosion.

Efficient application of water involves consideration of the available water capacity, the rate at which water enters and moves through the soil, and the amount of water required by the crop grown. Most crops should be irrigated when 40 to 50 percent of the available moisture in the top half of the root zone has been used.

Management of salt- and sodium-affected soils. Like most soils in arid and subarid regions, many of the soils in this survey area contain at least small quantities of soluble salts and sodium. In some soils high concentrations of salts and sodium limit or prevent the growth of crops. Because precipitation is low and the rate of evaporation is high, salts accumulate in the root zone. In addition, many low-lying areas receive salty water from runoff or seepage. Surface evaporation of this water generally results in an increase in content of soluble salts on or in the soils. In some areas that have a high water table, water rises in the soil by capillary action and carries dissolved salts with it. The soluble salts can be moved to any part of the soil profile.

A soil that contains excessive amounts of soluble salts is called a saline soil. One that contains excessive amounts of exchangeable sodium is called a sodic, or alkali, soil. A soil that contains excessive amounts of both soluble salts and sodium is called a saline-sodic soil. Saline-sodic phases of several of the soils in the survey have been mapped. The map unit name in most cases does not give the degree to which these soils are affected, nor does it indicate whether they contain both salts and sodium. This information is given in the map unit descriptions.

Four classes of salinity are recognized in the detailed soil map unit descriptions. These classes are as follows:

Nonsaline soils are those that contain less than 0.15 percent soluble salts. The electrical conductivity of the saturation extract is less than 4 millimhos per centimeter at 25 degrees C.

Slightly saline soils are those that contain 0.15 to 0.35 percent soluble salts. The electrical conductivity of the saturation extract is 4 to 8 millimhos per centimeter at 25 degrees C.

Moderately saline soils are those that contain 0.35 to 0.65 percent soluble salts. The electrical conductivity of the saturation extract is 8 to 16 millimhos per centimeter at 25 degrees C.

Strongly saline soils are those that contain more than 0.65 percent soluble salts. The electrical conductivity of the saturation extract is more than 16 millimhos per centimeter at 25 degrees C.

Four classes of sodicity are recognized in the detailed soil map unit descriptions. These classes are as follows:

Nonsodic soils contain less than 15 percent exchangeable sodium.

Slightly sodic soils contain 15 to 25 percent exchangeable sodium.

Moderately sodic soils contain 25 to 40 percent exchangeable sodium.

Strongly sodic soils contain more than 40 percent exchangeable sodium.

Soils differ in the kinds of salts they contain and in the practices needed for improvement; however, some general guidelines can be given. For example, an adequate supply of good-quality water and an adequate drainage system are needed to reclaim any saline or sodic soils. Two methods of applying water are commonly used. One method is land leveling that results in flat basins in which the water can accumulate. The other method involves leveling the land to a uniform grade and then flooding between border dikes. If drainage is adequate and if large amounts of water are used, the soluble salts can be leached out of the root zone by either method. The process is more difficult if a soil contains an excessive amount of exchangeable sodium. In addition to drainage and leaching, other practices are needed to improve sodium-affected soils.

Chemical amendments used to replace sodium are gypsum and its various forms, including gypsite, anhydrite, and selenite, as well as elemental sulfur, sulfuric acid, iron sulfate, and aluminum sulfate. Any of these amendments can be used successfully, but the soils react to some faster than to others. The amount and type of amendment needed can be determined by laboratory analysis of soil samples, which indicates the amounts of sodium that must be replaced if the soil is to be improved.

An alternative to reclamation through the use of large quantities of gypsum is the seeding of salt- and sodium-tolerant grasses. Among these are tall wheatgrass, western wheatgrass, and alta fescue. These grasses can grow in soils that have relatively high concentrations of both soluble salts and sodium.

Proper pasture management. Proper pasture management includes adjusting stocking rates or the season of use so that the maximum growth and survival of high-quality grasses and legumes can be achieved. A common method is to rotate grazing among several pastures. This method allows adequate regrowth in each pasture. Livestock should be excluded when the pastures are wet. Allowing livestock to graze on wet pasture results in compaction of the soil, a decrease in the water intake rate, and deterioration of soil structure. Proper irrigation management and drainage help to keep the pastures in good condition. Increased yields can be obtained by applying commercial fertilizer and barnyard manure. Weeds generally can be controlled by mowing. The droppings of manure should be spread with a drag each spring.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management can be obtained at the local office of the Soil Conservation Service. In any given year, yields may be higher or lower because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include reclamation, drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops

grown, that good quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Rangeland

About 95 percent of the land in the survey area is rangeland. About 75 percent of the agricultural income is derived from livestock, principally cattle. Cow-calf operations are dominant, but cow-calf-yearling operations also are common. Most of the rangeland is administered by the Bureau of Land Management. The privately owned land is mainly near Battle Mountain along the Humbolt River and in the Reese River and Antelope Valleys. Ranches vary in size from about 5,000 acres to 230,000 acres.

On some ranches the forage produced on the rangeland is supplemented by aftermath grazing on hayland and small grain stubble fields in fall. In winter the native forage generally is supplemented by hay, but some areas of winter range are in the survey area.

For each map unit suitable for use as rangeland, a table in the section "Rangeland Plants and Woodland Understory" shows the grasses, forbs, and shrubs that make up the potential native plant community on each major soil and contrasting inclusion; the common plant name and plant symbol for the characteristic vegetation; the average percent composition for each species in the potential plant community; the range site symbol; and the total annual production of vegetation in favorable, normal, and unfavorable years. A more detailed ecological description of each range site, identified by symbol, is provided in a technical guide available in the local office of the Soil Conservation Service.

A *range site* is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other range sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was established during this survey; thus, range sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table also are important.

Potential production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, flowers, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

Dry weight is the total annual yield per acre reduced to a common percent of air-dry moisture.

Characteristic vegetation—the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil—is listed by *common plant name*. The expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals, the grazing season, and the availability of forage. Many plants, trees, and shrubs are inaccessible to foraging animals.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only. It does not have a specific meaning that pertains to the present plant community for a given use.

Generally, the objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Grazing management should be at an intensity that maintains enough plant cover to protect the soil and that maintains or improves the quantity and quality of desirable vegetation. Proper management applies to all grazing animals, including livestock, game animals, and wild horses.

The most practical and efficient way to achieve good management of livestock grazing is with a planned grazing system. A good system is one in which two or

more grazing units are alternately rested from grazing in a planned sequence over a period of years. The rest period should extend at least through the growing season of the key plants. Using such a system ensures that the same unit is not grazed at the same time year after year.

Planned grazing systems should be designed to fit the individual operating unit but still meet management objectives. Using livestock watering developments, fencing, salting, or constructing livestock trails can help to achieve a better distribution of grazing.

Brush management is needed when the less desirable woody species increase beyond the natural proportions for the site. It can benefit both livestock and wildlife and can reduce sedimentation and improve watershed quality.

The use of chemicals is effective in brush management. When chemicals are properly applied in a timely manner, good results can be expected. The understory should include enough desirable plant species to respond to the treatment.

Prescribed burning is also effective in brush management. It is relatively inexpensive but requires precautions. Its success requires a good understory to provide fuel, and proper timing of the burning is critical. It is not so selective as chemical treatment.

Mechanical treatment practices, such as plowing, chaining, or beating, are effective on certain sites, but the cost is high.

Range seeding may be needed when the range has deteriorated to a point where desired plant species have disappeared or as critical area treatment following wildfire. Sites to be seeded should be evaluated on the basis of the soil, climate, topography, and planned use to determine the species that are adapted and the seeding techniques that can be used.

Even though adapted species and improved techniques are applied, successful seeding in this survey area is strongly influenced by rainfall. Precipitation fluctuates drastically from one year to the next, even in the areas that receive higher amounts of rainfall. The success of range seeding depends on the amount of moisture available during the growing season. Each soil is rated in the detailed map unit descriptions for planned range seeding. A plant cover should be maintained to prevent accelerated erosion on the soils that are poorly suited to seeding. The criteria used to develop the ratings are listed in the "Appendix."

Range seeding ratings are relative ratings that suggest the number of successful seeding establishments that might be expected during a given period of years. The ratings are not intended to be a measure of the total annual yield. Productivity is dependent upon the interaction of most of the soil properties and characteristics that are considered. In addition, the number of plant species adapted to the soil decreases with decreasing soil suitability.

Successful seeding of depleted areas of rangeland in the survey area reduces the runoff rate and thus helps to control erosion. The soils that are best suited to seeding are moderately deep or deeper; receive adequate moisture and can retain it; are resistant to sheet, rill, and wind erosion; are free of salts and sodium; and have a medium textured upper layer that is relatively free of rock fragments and is resistant to crusting.

Woodland Management

Woodland in this survey area is limited to small areas of singleleaf pinyon pine and Utah juniper. These sites are primarily on south- and west-facing mountain crests and side slopes. Elevations are 6,000 to 8,000 feet. The sites are on the Toiyabe, Shoshone, and Fish Creek Ranges as well as on Battle Mountain.

These sites are used mainly as wildlife habitat and for livestock understory grazing. A limited use is made of pinyon and juniper for fenceposts and firewood, but steep slopes limit access to most stands. Productivity of wood products is low.

The detailed soil map units can be used by woodland owners or forest managers in planning the use of soils for wood crops. In each map unit those soils suitable for wood crops are identified and the ordination (woodland suitability) symbol for each soil is listed. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R* indicates steep slopes; *X*, stoniness or rockiness; *W*, excessive water in or on the soil; *T*, toxic substances in the soil; *D*, restricted root depth; *C*, clay in the upper part of the soil; *S*, sandy texture; and *F*, high content of coarse fragments in the soil profile. The letter *0* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, and F.

The potential productivity of common trees on a soil is expressed as a *site index*. This index is the basal area that dominant and codominant trees of a given species attain in a specified number of years. The site

index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Woodland Understory Vegetation

Understory vegetation consists of grasses, forbs, shrubs, and other plants. If well managed, some woodland can produce enough understory vegetation to support grazing of livestock or wildlife, or both, without damage to the trees.

The quantity and quality of understory vegetation vary with the kind of soil, the age and kind of trees in the canopy, the density of the canopy, and the depth and condition of the litter.

The total production of understory vegetation, indicated in the section "Rangeland Plants and Woodland Understory," includes the herbaceous plants and the leaves, twigs, and fruit of woody plants up to a height of 4.5 feet. It is expressed in pounds per acre of air-dry vegetation in favorable, normal, and unfavorable years. In a favorable year, soil moisture is above average during the optimum part of the growing season; in a normal year, soil moisture is average; and in an unfavorable year, it is below average.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection. All windbreaks in the survey area require irrigation.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from local offices of the Soil Conservation Service or the Cooperative Extension Service or from a commercial nursery.

Wildlife Habitat

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

Wildlife is a valuable resource in the survey area. It provides opportunities for outdoor activities, such as hunting and fishing.

Wildlife is a product of the soil. Like crops, wildlife responds to good management. Most managed wildlife habitat is created, improved, or maintained by planting suitable vegetation, by manipulating existing vegetation to bring about the natural establishment of desired plants, or by a combination of both. The habitat elements needed by specific species of wildlife generally require several kinds of soil and a combination of land uses.

In the detailed soil map unit descriptions, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat. The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, orchardgrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil

properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are needlegrass, balsamroot, globemallow, wheatgrass, and bluegrass.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are singleleaf pinyon and juniper.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are mountainmahogany, bitterbrush, snowberry, and big sagebrush.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, reed canarygrass, saltgrass, cordgrass, rushes, sedges, and cattail.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

Recreation

Restrictive soil features such as wetness, slope, and texture of the surface layer are considered when evaluating a particular site for recreational development. Susceptibility to flooding is considered. The location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines should be considered. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

Camp areas, picnic areas, playgrounds, and paths and trails need special attention.

Camp areas require such site preparation as shaping and leveling for tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils for this use have mild slopes and are not wet or subject to flooding during the period of use. The surface has few if any stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing camping sites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for use as picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that will increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones or boulders, is firm after rains, and is not dusty when dry. If shaping is required to obtain a uniform grade, the depth of the soil over bedrock or hardpan should be enough to allow necessary grading.

Paths and trails for walking, horseback riding, bicycling, and other uses should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once during the annual period of use. They should have moderate slopes and have few or no stones or boulders on the surface.

In Lander County, North Part, several areas have recreational potential. These vary from mountainous areas to valley bottoms. Outdoor recreation includes hunting, fishing, picnicking, riding, hiking, and rock and artifact hunting.

Engineering

In the section "Detailed Soil Map Units," information for planning land uses related to urban development and to water management is provided. Soils are rated for various uses, and the most limiting features are identified. The ratings are given for the following selected uses: roadfill; topsoil; daily cover for landfill; shallow excavations; local roads and streets; pond reservoir areas; embankments, dikes, and levees; sand;

and gravel. For some soils the restrictive features that affect drainage, irrigation, and terraces and diversions also are given. More information can be obtained from local offices of the Soil Conservation Service.

The information is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings. The criteria used to determine the ratings are provided in the "Appendix." During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreation uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the map unit descriptions, along with the soil maps, the taxonomic unit descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the "Glossary."

In the detailed map unit descriptions, the soils are rated for various uses and the most limiting features are identified. The ratings are based on observed performance of the soils and on the estimated data given in the map units and lab test data. The limiting features are defined in the "Glossary."

Soil interpretations are periodically updated as more is learned about a soil and its behavior under specific uses. New technology can change the relative suitability of a soil for various uses; however, the soil maps remain useful after the soil interpretations originally published with them have become outdated. For this reason, the criteria and guides that were used to make the interpretations presented in the detailed map units are provided in the "Appendix." These criteria have been taken directly from the "National Soils Handbook" *(28)*.

The limitations for shallow excavations, local roads and streets, pond reservoir areas, and embankments, dikes, and levees are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of

the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In the detailed map unit descriptions, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the upper layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

In the detailed map unit descriptions, the soils are rated for use as roadfill, topsoil, and daily cover for landfill.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. The soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the upper layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. These soils may have layers of suitable material, but the material is less than 3 feet thick.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The upper layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Daily cover for landfill is the soil material that is used

to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The upper layer generally has the best workability, more organic matter, and the best potential for plants. Material from the upper layer should be stockpiled for use as the final cover.

The soils are rated as a probable or improbable source of *sand* and *gravel*. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. Only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the taxonomic unit descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a *probable* source has a layer of clean sand or gravel or a layer of sand or gravel that is as much as 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an *improbable* source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

In some of the detailed map unit descriptions, the restrictive features that affect drainage, irrigation, and terraces and diversions are listed.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features are given in the section "Detailed Soil Map Units."

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties given in the map unit descriptions include the range of grain-size distribution, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area are given in the "Typical Profile" in the detailed map unit descriptions and in Table 5 as described below. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the "Glossary."

Classification of the soils is determined according to the system adopted by the American Association of State Highway and Transportation Officials *(1)* and the Unified soil classification system *(2)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments ranging from 2 millimeters in diameter to larger than 3 inches are indicated as a percentage of the total soil on a dry-weight basis. Cobbles and stones are larger than 3 inches in diameter, and pebbles are 2 millimeters to 3 inches in diameter. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. The estimates are rounded to the nearest 5 percent.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The

sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Estimates of some characteristics and features that affect soil behavior are given in the detailed map unit descriptions. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in total inches of water for the soil profile. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the map unit descriptions. Salinity affects the suitability of a soil for rangeland seeding and crop production, the stability of the soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodicity is a measure of exchangeable sodium in the soil at saturation. It is expressed as a sodium adsorption ratio (SAR), or the ratio of sodium to calcium plus magnesium. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The sodicity of irrigated soils is affected by the quality of irrigation water and management of the soil. Hence, the sodicity of soils in individual fields can differ greatly from the value given in the map unit descriptions. Sodicity affects the suitability of a soil for rangeland seeding and crop production and the stability of the soil if used as construction material.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2

millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, very fine sand, sand, and organic matter (up to 4 percent) and on soil structure and permeability. The estimates are modified by the presence of rock fragments. Values of K range from 0.02 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water. The estimate for the factor K is made only on the surface layer.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of the soil surface to wind erosion. Soils are grouped according to the amount of stable aggregates 0.84 millimeters in size. These are represented idealistically by USDA textural classes. Soils containing rock fragments can occur in any group. The following paragraphs describe the groups by textural class:

1. Coarse sands, sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to reestablish after cultivation.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control wind erosion are used.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils are very slightly erodible. Crops can be grown if ordinary measures to control wind erosion are used.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can be grown if ordinary measures to control wind erosion are used.

8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

The *hazard of erosion* is an estimate of erosion of the bare soil surface by water and wind. The hazard of erosion by water is determined on the basis of erosion factor K and percent slope. The hazard of erosion by wind is determined on the basis of the stability of the soil surface and the climate. The guidelines used in estimating the hazard of erosion are given in the "Appendix."

Soil and Water Features

Estimates of various soil and water features are given in the detailed map unit descriptions. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These

consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams or by runoff from adjacent slopes. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

The frequency and duration of flooding and the time of year when flooding is most likely is given in the map unit descriptions.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs, on the average, no more than once in 2 years; and *frequent* that it occurs, on the average, more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. The depth to the seasonal high water table is indicated in the map unit descriptions. A water table that is seasonally high for less than 1 month is not indicated.

Only saturated zones within a depth of about 6 feet are indicated.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping.

Cemented pans are cemented or indurated subsurface layers within a depth of 5 feet. Such pans cause difficulty in excavation. Pans are classified as thin or thick. A *thin* pan is less than 3 inches thick if continuously indurated or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A *thick* pan is more than 3 inches thick if continuously indurated or more than 18 inches thick if discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Corrosivity pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

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Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(27)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 6 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Aridisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Orthid (*Orth*, meaning true, plus *id*, from Aridisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Camborthids (*Camb*, meaning change, plus *orthid*, the suborder of the Aridisols).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Camborthids.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is loamy-skeletal, mixed, mesic Typic Camborthids.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(26)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(27)*. Unless otherwise stated, matrix colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Akerue Series

The Akerue series consists of shallow, well drained soils that formed in residuum of weathered andesite,

rhyolite, and quartzite. Akerue soils are on low foothills. Slopes are 4 to 8 percent. Mean annual precipitation is about 10 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid, shallow Xerollic Durargids

Typical pedon: Akerue very cobbly loam, 15 to 30 percent slopes, in an area of the Akerue-Simpark-Punchbowl association, in Lander County, south part:

A—0 to 3 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium and thick platy structure; slightly hard, very friable, sticky and plastic; few fine and many very fine roots; many very fine and fine vesicular pores; 10 percent pebbles, 25 percent cobbles, 2 percent stones; mildly alkaline (pH 7.4); clear smooth boundary. (3 to 6 inches thick)

Bt1—3 to 6 inches; pale brown (10YR 6/3) very cobbly clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; few thin clay films on faces of peds; 10 percent pebbles, 25 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary. (3 to 7 inches thick)

Bt2—6 to 15 inches; yellowish brown (10YR 5/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; moderate fine and medium angular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine and fine tubular pores; many thick pressure faces on peds; 10 percent pebbles, 35 percent cobbles; mildly alkaline (pH 7.6); abrupt wavy boundary. (4 to 9 inches thick)

Bqkm—15 to 21 inches; very pale brown (10YR 8/4) indurated duripan containing many bedrock fragments and cemented with several continuous laminar layers; light yellowish brown (10YR 6/4) moist; massive; extremely hard; few fine roots in some fractures; violently effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (0.5 inch to 6 inches thick)

R—21 inches; andesite.

Type location: Lander County, Nevada, south part; about 18 miles east of Austin, approximately 500 feet north and 1,500 feet west of the southeast corner of sec. 31, T. 18 N., R. 47 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring

Soil temperature: 44 to 47 degrees F

Depth to duripan: 14 to 20 inches

Depth to bedrock: 15 to 26 inches

Control section: Clay content—35 to 45 percent; content of rock fragments—35 to 60 percent, mostly cobbles and stones

Reaction of A and Bt horizons: Neutral or mildly alkaline, becoming more alkaline with depth

Other features: Silica and lime pendants on rock fragments in the lower part of the Bt horizon in some pedons

A horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3

Bt horizon:
- Hue—7.5YR or 10YR
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—3 or 4
- Texture—very cobbly clay loam, very cobbly clay, or extremely cobbly clay loam

Alley Series

The Alley series consists of very deep, well drained soils that formed in loess over alluvium and colluvium derived from mixed andesite, basalt, and tuff that has some influence from loess. Alley soils are on side slopes of foothills. Slopes are 15 to 75 percent. Mean annual precipition is about 8 inches, and mean annual air temperature is about 49 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Durixerollic Haplargids

Typical pedon: Alley loam, 30 to 50 percent slopes, in an area of the Burrita-Alley-Newpass association:

A—0 to 3 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; weak very thin platy structure; soft, very friable, sticky and slightly plastic; many fine and very fine and few medium roots; many fine vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 8 inches thick)

Bt1—3 to 7 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and very fine and few medium roots; common very fine tubular pores; 15 percent pebbles; common thin clay films on faces of peds; mildly alkaline (pH 7.8); clear smooth boundary. (3 to 6 inches thick)

Bt2—7 to 16 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure;

hard, firm, sticky and plastic; few fine and medium roots; common very fine tubular pores; 20 percent pebbles; common thin clay films on faces of peds; mildly alkaline (pH 7.8); clear smooth boundary. (4 to 9 inches thick)

Bqk—16 to 26 inches; very pale brown (10YR 7/4) gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; hard, firm, nonsticky and nonplastic; common very fine and few fine roots; common very fine tubular pores; 20 percent pebbles; lime coatings on pebbles; weak continuous silica and lime cementation; slightly effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (6 to 10 inches thick)

Bk1—26 to 40 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine roots; common very fine tubular pores; 30 percent pebbles; lime coating on pebbles; strongly effervescent and very strongly effervescent with disseminated lime; strongly alkaline (pH 8.6); gradual wavy boundary. (6 to 10 inches thick)

Bk2—40 to 60 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, brown (7.5YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and few fine roots; common very fine tubular pores; 50 percent pebbles, 5 percent cobbles; lime coatings on rock fragments; violently effervescent with disseminated lime; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; about 12 miles north of Battle Mountain, approximately 1,200 feet south and 2,500 feet west of the northeast corner of sec. 14, T. 33 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to weakly silica- and lime-cemented strata: 16 to 30 inches
Depth to carbonates: 16 to 22 inches
Reaction: Mildly alkaline to strongly alkaline, becoming more alkaline with depth
Other features: Few to many, fine to coarse lime segregations in most pedons where depth to the Bqk horizon is more than 22 inches

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Structure—weak or moderate, very thin to thick platy; massive in some pedons
Reaction—neutral or mildly alkaline
Other features—when mixed, the uppermost 7 inches has color values greater than 5.5 dry and 3.5 moist

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—2 to 4
Texture—gravelly loam, gravelly clay loam, or gravelly sandy clay loam
Clay content—20 to 30 percent
Rock fragments—15 to 30 percent, mainly pebbles
Structure—weak or moderate, fine to coarse subangular blocky
Reaction—mildly alkaline or moderately alkaline

Bqk horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—1 to 4
Texture—gravelly fine sandy loam, gravelly sandy loam, or cobbly fine sandy loam
Rock fragments—15 to 35 percent, mainly pebbles or cobbles
Consistence—hard or very hard
Reaction—moderately alkaline or strongly alkaline
Silica cementation—few thin or very thin discontinuous silica laminae in some pedons; durinodes in a friable matrix below the weakly cemented horizons in some pedons

2Bk horizon (not in all pedons):
Rock fragments—40 to 60 percent when mixed, mostly pebbles and cobbles, few stones in some pedons

Allor Series

The Allor series consists of very deep, well drained soils formed in alluvium weathered from mixed rock sources. Allor soils are on fan piedmont remnants. Slopes are 4 to 30 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Durixerollic Haplargids

Typical pedon: Allor gravelly loam, 4 to 15 percent slopes, in an area of the Zaidy-Allor association, in Lander County, south part. Pebbles cover 30 percent of the soil surface:

A1—0 to 6 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine vesicular pores; 15 percent pebbles; mildly alkaline (pH 7.8);

abrupt smooth boundary. (3 to 7 inches thick)
A2—6 to 12 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary. (0 to 6 inches thick)
Bt—12 to 19 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many very fine and fine roots; common very fine and fine tubular pores; few thin clay films coating peds; 15 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (3 to 7 inches thick)
Btq—19 to 34 inches; pale brown (10YR 6/3) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; common very fine and fine tubular pores; few moderately thick and common thin clay films coating peds; 25 percent pebbles; 15 percent weakly cemented durinodes; mildly alkaline (pH 7.8); clear smooth boundary. (8 to 15 inches thick)
Bq1—34 to 42 inches; pale brown (10YR 6/3) gravelly loamy sand, brown (10YR 4/3) moist; massive; very hard, firm, nonsticky and nonplastic; few fine roots; few fine tubular pores; 25 percent pebbles, 5 percent cobbles; weak continuous silica cementation; mildly alkaline (pH 7.8); clear smooth boundary. (6 to 16 inches thick)
Bq2—42 to 60 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 4/3) moist; massive; very hard, firm, nonsticky and nonplastic; 50 percent pebbles, 5 percent cobbles; weak silica cementation; slightly effervescent; moderately alkaline (pH 8.3).

Type location: Lander County, Nevada, south part; about 10 miles northeast of Austin, approximately 650 feet south and 2,400 feet west of the northeast corner of sec. 21, T. 20 N., R. 45 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 50 degrees F
Combined A and Bt horizons: 20 to 34 inches
Depth to Bq horizon: 20 to 34 inches
Depth to carbonates: 40 to more than 60 inches
Control section: Texture—clay loam or sandy clay loam; clay content—27 to 35 percent; content of rock fragments—15 to 35 percent, mainly pebbles
Reaction: Mildly alkaline or moderately alkaline, generally becoming more alkaline with depth
Other features: A BA or Bqk horizon in some pedons

A horizon:
Value—3 or 4 moist
Chroma—2 or 3

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Cementation—as much as 15 percent durinodes in the lower part of the Bt horizon in most pedons

Bq and Bqk horizons:
Value—5 to 7 dry, 4 or 5 moist
Chroma—3 or 4
Cementation—weak continuous cementation; noncemented strata in some pedons
Texture—loamy sand or sandy loam
Rock fragments—20 to 60 percent, mainly pebbles

Alyan Series

The Alyan series consists of moderately deep, well drained soils that formed in residuum and colluvium derived from igneous rocks and siliceous tuff. Alyan soils are on crests and shoulders of mountains. Slopes are 4 to 15 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Fine, montmorillonitic, frigid Aridic Argixerolls

Typical pedon: Alyan gravelly loam, 4 to 15 percent slopes, in an area of the Alyan-Graley-Rock outcrop association. Pebbles cover 20 percent and cobbles 5 percent of the soil surface:

A1—0 to 2 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; strong very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many common very fine vesicular pores; 25 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (1 to 3 inches thick)
A2—2 to 5 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; strong very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine and few fine tubular pores; 15 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (3 to 9 inches thick)
A3—5 to 10 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure;

slightly hard, friable, sticky and plastic; common very fine and few fine and medium roots; common very fine and few fine and medium tubular pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (3 to 8 inches thick)

Bt1—10 to 16 inches; brown (10YR 5/3) clay, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; common very fine and few fine and medium roots; common very fine and few fine and medium tubular pores; few thin clay films on faces of peds and pores; 10 percent pebbles and 2 percent cobbles; mildly alkaline (pH 7.6); clear wavy boundary. (3 to 8 inches thick)

Bt2—16 to 20 inches; light gray (10YR 7/2) gravelly clay, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine, fine, and medium roots; common very fine and few fine and medium tubular pores; common thin clay films on faces of peds and pores; 25 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.4); abrupt smooth boundary. (4 to 18 percent inches thick)

Bt3—20 to 24 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong medium and coarse subangular blocky structure; extremely hard, extremely firm, very sticky and very plastic; few very fine exped roots; few very fine tubular pores; continuous moderately thick clay films on faces of peds and pores; 10 percent pebbles, 2 percent cobbles; mildly alkaline (pH 7.6); abrupt wavy boundary. (0 to 5 inches thick)

R—24 inches; hard, unweathered rhyolite.

Type location: Lander County, Nevada; about 25 miles north of Battle Mountain, approximately 1,900 feet north of the southeast corner of sec. 14, T. 36 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 44 to 47 degrees F
Mollic epipedon thickness: 8 to 18 inches, includes the upper part of the argillic horizon
Depth to bedrock: 20 to 40 inches
Thickness of the A and Bt horizons: 20 to 40 inches
Control section: Clay content—40 to 55 percent; content of rock fragments—averages 15 to 35 percent, mainly pebbles

A horizon:
- Value—4 or 5 dry, 2 or 3 moist
- Chroma—2 or 3
- Structure—platy or subangular blocky
- Reaction—neutral or mildly alkaline

Bt horizon:
- Hue—10YR or 7.5YR
- Value—5, 6, or 7 dry, 3, 4, or 5 moist; darker values are common only in the upper part of the horizon
- Chroma—2, 3, or 4
- Texture—clay or gravelly clay that has thin subhorizons of very gravelly clay overlying the bedrock in most pedons and thin gravelly clay loam subhorizons in some pedons
- Structure—subangular blocky; massive in some pedons
- Reaction—neutral or mildly alkaline

Antel Series

The Antel series consists of very deep, moderately well drained soils that formed in silty alluvium derived from mixed sediments, mostly of volcanic rocks, tuff, loess, and volcanic ash. Antel soils are on fan skirts and stream terraces. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-silty, mixed, mesic Duric Camborthids

Typical pedon: Antel silt loam, 0 to 2 percent slopes:

A—0 to 5 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; strong coarse and very coarse prismatic structure parting to moderate thin and medium platy; slightly hard, very friable, slightly sticky and plastic; few very fine roots; many very fine vesicular, interstitial, and tubular pores; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (5 to 8 inches thick)

Bw—5 to 11 inches; very pale brown (10YR 7/3) silt loam, dark yellowish brown (10YR 4/4) moist; strong thin and medium platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine and few fine and medium roots; many very fine interstitial and tubular pores; moderately alkaline (pH 8.4); clear irregular boundary. (5 to 12 inches thick)

Bq—11 to 16 inches; very pale brown (10YR 7/3) silty clay loam, brown (10YR 4/3) moist; moderate medium platy structure; hard, very friable, sticky and plastic; common very fine and few fine and medium roots; common very fine interstitial and tubular pores; 30 percent 10- to 30-millimeter, weak and moderately strong durinodes; moderately alkaline (pH 8.2); gradual wavy boundary. (0 to 6 inches thick)

2Bq—16 to 25 inches; white (10YR 8/2) very fine sandy loam (dominantly volcanic ash), yellowish brown

(10YR 5/4) moist; few fine faint brown (10YR 4/3 moist) mottles; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 30 percent 10- to 20-millimeter, weak and moderately strong durinodes; slightly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (0 to 9 inches thick)

3Bqk1—25 to 37 inches; grayish brown (10YR 5/2) silty clay loam, brown (10YR 4/3) moist; common fine faint yellowish brown (10YR 5/4 moist) and dark yellowish brown (10YR 4/4 moist) mottles; moderate medium prismatic structure that parts to weak fine angular blocky; slightly hard, very friable, sticky and very plastic; few very fine and fine roots; common very fine tubular pores; 20 percent 10- to 20-millimeter, weak and moderately strong durinodes; common fine white (10YR 8/1) lime filaments that are strongly effervescent; strongly alkaline (pH 9.0); gradual wavy boundary. (10 to 16 inches thick)

3Bqk2—37 to 60 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 3/3) moist; common fine distinct dark yellowish brown (10YR 4/4 moist) and faint very dark grayish brown (10YR 3/2 moist) mottles; moderate medium prismatic structure that parts to moderate fine angular blocky; hard, very friable, sticky and very plastic; few very fine and fine roots; common very fine tubular pores; 10 percent 10- to 20-millimeter, weak and moderately strong durinodes; few very dark gray (10YR 3/1) and black (10YR 2/1 moist) iron and manganese streaks; few fine white (10YR 8/1) filaments and soft masses of lime; slightly effervescent matrix; violently effervescent segregated lime; strongly alkaline (pH 8.6); clear smooth boundary. (10 to 25 inches thick)

3Bk—60 to 66 inches; very pale brown (10YR 7/3) silt loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, slightly sticky and plastic; many very fine tubular pores; 5 percent 2- to 10-millimeter, rounded and subrounded pebbles; few fine white (10YR 8/2) and very pale brown (10YR 7/3 moist) lime filaments; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; approximately 39 miles southwest of Battle Mountain, about 1,000 feet east and 160 feet north of the southwest corner of sec. 20, T. 26 N., R. 43 E.

Range in Characteristics

Soil moisture: Usually dry, but some pedons are moist in some part for short periods from October through May

Soil temperature: 47 to 53 degrees F

Depth to Bq horizon: 11 to 20 inches

Control section: Clay content—27 to 35 percent; texture—very fine sandy loam, silt loam, silty clay loam, or silty clay, averaging silty clay loam; content of rock fragments—0 to 5 percent pebbles

Reaction: Moderately alkaline or strongly alkaline

Salt and sodium: Moderately or strongly affected below a depth of 20 to 30 inches and slightly affected above; moderately sodium affected in the upper part of some pedons

Other features: Below a depth of 20 inches in some pedons, a horizon, less than 5 inches thick, that is 10 percent weakly discontinuously silica and carbonate cemented; faint or distinct relict iron mottles are common in any horizon below a depth of 16 inches

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 3, 4, or 5 moist
- Chroma—2, 3, or 4
- Structure—platy or prismatic
- Other features—noneffervescent in some pedons

Bw horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 3, 4, or 5 moist
- Chroma—2, 3, or 4
- Structure—platy or prismatic

Bq horizon:
- Hue—10YR or 2.5Y
- Value—5, 6, 7, or 8 dry, 3, 4, or 5 moist
- Chroma—2, 3, or 4
- Structure—prismatic parting to angular blocky; platy; massive in some pedons
- Consistence—slightly hard or hard dry, slightly sticky or sticky and slightly plastic or plastic wet
- Effervescence—slightly effervescent to violently effervescent
- Cementation—20 to 40 percent weakly or strongly silica-cemented durinodes

Bqk horizon:
- Hue—10YR or 2.5Y
- Value—5, 6, 7, or 8 dry, 3, 4, or 5 moist
- Chroma—2, 3, or 4
- Structure—prismatic parting to angular blocky or platy; massive in some pedons
- Consistence—slightly hard or hard dry, slightly sticky or sticky and slightly plastic or plastic wet
- Effervescence—slightly effervescent to violently effervescent
- Cementation—10 to 20 percent weakly to strongly silica-cemented durinodes

Argenta Series

The Argenta series consists of very deep, somewhat poorly drained soils that formed in loamy alluvium derived from mixed rock sources high in content of pyroclastic materials. Argenta soils are on alluvial flats and remnant flood plains. Slopes are 0 to 4 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Aeric Halaquepts

Typical pedon: Argenta very fine sandy loam, 0 to 2 percent slopes:

A1—0 to 3 inches; light brownish gray (10YR 6/2) very fine sandy loam, brown (10YR 5/3) moist; weak thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; slightly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary. (3 to 6 inches thick)

A2—3 to 7 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak very thin platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine and few fine roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (0 to 4 inches thick)

BA—7 to 12 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and fine tubular pores; 5 percent pebbles; 10 percent very weak, 10- to 20-millimeter durinodes; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (4 to 6 inches thick)

Bqk1—12 to 24 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and very few fine tubular pores; 10 percent pebbles; 25 percent weak, 5- to 25-millimeter durinodes; common fine segregated lime filaments; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (10 to 20 inches thick)

Bqk2—24 to 45 inches; light gray (10YR 7/2) very fine sandy loam, brown (10YR 4/3) moist; few fine distinct brown (7.5YR 4/4 moist) mottles; massive; slightly hard, friable, nonsticky and slightly plastic; few very fine roots; common very fine tubular pores; 10 percent pebbles; 25 percent weak and moderately strong, 15- to 25-millimeter durinodes; common fine segregated lime filaments; violently effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary. (15 to 25 inches thick)

2C—45 to 60 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; common fine distinct reddish brown (5YR 4/4 moist) mottles; massive; soft, very friable, nonsticky and slightly plastic; few very fine roots; common very fine tubular pores; 30 percent pebbles; slightly effervescent; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; approximately 1.7 miles east of Battle Mountain, about 1,850 feet south and 125 feet west of the approximate northeast corner of sec. 1, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture: A seasonal water table at a depth of 32 to 40 inches for periods from February through July

Soil temperature: 47 to 52 degrees F

Depth to Bqk horizon: 12 to 24 inches

Control section: Clay content—8 to 18 percent; content of rock fragments—up to 15 percent pebbles; texture—very fine sandy loam or fine sandy loam that is 15 to 40 percent fine sand or coarser

Reaction throughout the profile: Moderately alkaline to very strongly alkaline

Relict mottles: In the upper part of some pedons

Salt and sodium: Slightly to strongly salt and strongly sodium affected to a depth of 24 to 30 inches, the degree decreasing with depth; percentage of exchangeable sodium ranges from 15 to 70 in half or more of the upper 15 inches and decreases with depth

Other features: Unconformable strata of loamy fine sand, fine sand, gravelly or very gravelly sand, or very coarse sand below a depth of 40 inches in some pedons

A horizon:

Value—6 to 8 dry, 4 or 5 moist
Chroma—2 or 3
Reaction—strongly alkaline or very strongly alkaline

Bqk horizon:

Hue—10YR or 7.5YR
Value—6 to 8 dry, 4 or 5 moist
Chroma—2 to 4
Texture—very fine sandy loam, fine sandy loam, silt loam, or loam
Other features—15 to 70 percent durinodes in a friable matrix

Atlow Series

The Atlow series consists of shallow, well drained

soils formed in residuum derived from chert, argillite, shale, and altered rhyolitic tuff. Atlow soils are on summits and side slopes of mountains and hills. Slopes are 8 to 50 percent. Mean annual precipitation is about 10 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids

Typical pedon: Atlow very gravelly loam, 15 to 50 percent slopes, in an area of the Atlow-Stingdorn association, in Lander County, south part. Pebbles cover 40 percent and cobbles 10 percent of the soil surface:

A—0 to 3 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine vesicular pores; 25 percent pebbles, 10 percent cobbles; moderately alkaline (pH 8.0); abrupt smooth boundary. (2 to 5 inches thick)

Bt1—3 to 7 inches; pale brown (10YR 6/3) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; common very fine interstitial pores; 25 percent pebbles, 10 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary. (0 to 5 inches thick)

Bt2—7 to 14 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate angular blocky structure; hard, friable, very sticky and very plastic; common very fine and fine roots; common very fine interstitial and few tubular pores; 30 percent pebbles, 15 percent cobbles; few thin lime coatings on undersides of coarse fragments; moderately alkaline (pH 8.0); abrupt irregular boundary. (6 to 11 inches thick)

R—14 inches; chert; thin lime coatings in rock fractures.

Type location: Lander County, Nevada, south part; about 30 miles southwest of Battle Mountain, approximately 1,200 feet east and 1,050 feet north of the southwest corner of sec. 1, T. 29 N., R. 43 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 48 to 52 degrees F
Solum thickness: 14 to 20 inches
Depth to bedrock: 14 to 20 inches
Control section: Fine-earth texture—clay loam; clay content—27 to 35 percent

A horizon:
Value—6 or 7 dry, 3, 4, or 5 moist
Chroma—2 or 3
Reaction—mildly alkaline or moderately alkaline

Bt horizon:
Value—5, 6, or 7 dry, 4 or 5 moist
Chroma—2 to 4
Texture—very gravelly clay loam or very cobbly clay loam
Rock fragments—35 to 50 percent, dominantly pebbles and cobbles
Structure—angular blocky, subangular blocky
Reaction—moderately alkaline or strongly alkaline
Carbonates—noncalcareous matrix; thin lime coatings on the underside of rock fragments

Attella Series

The Attella series consist of very shallow, well drained soils that formed in residuum and colluvium derived from dolostone, dolomite, and calcareous shales with additions of loess. Attella soils are on side slopes of mountains. Slopes are 30 to 50 percent. Mean annual precipitation is about 11 inches, and mean annual temperature is about 42 degrees F.

Taxonomic class: Loamy-skeletal, mixed (calcareous), frigid Lithic Xeric Torriorthents

Typical pedon: Attella very gravelly loam, 30 to 50 percent slopes, in an area of the Hymas-Xine-Attella association, in Lander County, south part. Pebbles cover 80 percent and flagstones 5 percent of the soil surface:

A—0 to 3 inches; light brownish gray (10YR 6/2) very gravelly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine vesicular and interstitial pores; 45 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 5 inches thick)

C—3 to 7 inches; light brownish gray (10YR 6/2) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and many medium roots; common very fine and fine tubular pores; 45 percent pebbles; common thin lime coatings on undersides of pebbles, few pendants; strongly effervescent; moderately alkaline (pH 8.3); abrupt wavy boundary. (4 to 6 inches thick)

2R—7 inches; hard, fractured dolostone.

Type location: Lander County, Nevada, south part; approximately 12 miles north of Austin, about 2,100 feet north and 2,000 feet east of the southwest corner of sec. 26, T. 21 N., R. 44 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually moist, dry from mid-June through mid-October
Soil temperature: 41 to 47 degrees F
Depth to bedrock: 6 to 10 inches
Carbonate equivalent: 5 to 20 percent
Control section: Clay content—15 to 25 percent when mixed; texture—very gravelly loam or very gravelly silt loam; content of rock fragments—35 to 60 percent when mixed, mainly pebbles and some channers
Reaction throughout the profile: Mildly alkaline or moderately alkaline
Organic carbon: 1.0 to 2.5 percent when mixed
A horizon:
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 or 3
Structure—weak or moderate, thin or medium platy or granular
Consistence—friable or very friable moist
C horizon:
Value—6 or 7 dry, 3, 4, or 5 moist
Chroma—2, 3, or 4
Structure—fine or medium subangular blocky; massive in some pedons
Consistence—soft or slightly hard dry, friable or very friable moist
Effervescence—strongly effervescent or violently effervescent
Segregated lime—lime coatings on undersides of rock fragments, soft masses of lime in some pedons

Batan Series

The Batan series consists of very deep, moderately well drained soils that formed in silty alluvium derived from mixed rock sediments of mostly volcanic origin that are high in content of loess and pyroclastic materials. Batan soils are on stream terraces, flood plains, and alluvial flat remnants. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Durorthidic Torriorthents

Typical pedon: Batan silt loam, 0 to 2 percent slopes:

A—0 to 5 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; strong very thin platy structure; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many vesicular and few very fine interstitial and tubular pores; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (2 to 6 inches thick)

C—5 to 9 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate very thin and thin and strong very thick platy structure; hard, very friable, slightly sticky and plastic; common very fine roots; many very fine interstitial and tubular pores; violently effervescent; very strongly alkaline (pH 9.2); clear wavy boundary. (0 to 8 inches thick)

Cq—9 to 19 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; many very fine tubular pores; 30 percent 5- to 15-millimeter, hard, firm, brittle durinodes; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (0 to 16 inches thick)

Cqk1—19 to 30 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; few fine faint brown (7.5YR 5/4 moist) and dark brown (7.5YR 4/4 moist) mottles; weak very thin platy structure; slightly hard, very friable, sticky and plastic; few very fine and few fine roots; many very fine interstitial and tubular pores; 20 percent 5- to 15-millimeter, hard, firm, brittle durinodes; fine white (10YR 8/2) filaments or threads of secondary carbonates; violently effervescent; strongly alkaline (pH 8.8); gradual smooth boundary. (6 to 13 inches thick)

Cqk2—30 to 44 inches; light gray (2.5Y 7/2) silt loam, grayish brown (2.5Y 5/2) moist; common fine distinct light brown (7.5YR 6/4 moist) and dark yellowish brown (10YR 4/4 moist) mottles; strong medium platy structure parting to moderate very fine angular blocky; hard, friable, slightly sticky and plastic; few very fine, fine, and medium roots; common very fine tubular pores; 20 percent 5- to 15-millimeter, hard, firm, brittle durinodes; fine white (10YR 8/2) filaments or threads of secondary carbonates; violently effervescent; strongly alkaline (pH 8.6); gradual smooth boundary. (7 to 16 inches thick)

Cqk3—44 to 63 inches; light gray (2.5Y 7/2) silty clay loam, grayish brown (2.5Y 5/2) moist; many fine distinct brown (7.5YR 4/4) and dark reddish brown (5YR 3/2) mottles, brown (7.5YR 4/2) and dark reddish brown (5YR 2/4) moist; moderate very thin

and thin platy structure parting to moderate very fine angular blocky; hard, friable, sticky and plastic; few very fine and fine roots; many very fine interstitial and few fine tubular pores; 20 percent 5- to 15-millimeter, hard, firm, brittle durinodes; fine white (10YR 8/1) filaments or threads of secondary carbonates; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (8 to 18 inches thick)

C'—63 to 68 inches; very pale brown (10YR 7/3) silt loam, dark grayish brown (2.5Y 4/2) moist; common fine faint pinkish gray (7.5YR 6/2 moist) and distinct brown (7.5YR 4/2 moist) mottles; massive; hard, friable, slightly sticky and plastic; few fine roots; many very fine interstitial and tubular pores; violently effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; approximately 6.2 miles southeast of Battle Mountain, about 1,585 feet west and 1,585 feet north of the approximate southeast corner of sec. 31, T. 32 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 53 degrees F
Depth to Cq horizon: 9 to 24 inches
Control section: Clay content—20 to 30 percent; texture—silt loam, silty clay loam; but may be stratified fine sandy loam to silty clay
Salt and sodium: Salt and sodium affected in most pedons; no salt and sodium in the upper horizons of some pedons near drainageways and stream channels
Mottles: Faint or distinct iron mottles are common in any horizon below a depth of 10 inches
Gypsum: Gypsum crystals below a depth of 20 inches in some pedons
2C horizon (where present): Unconformable stratified very gravelly sands and fine sands below a depth of 50 inches in some pedons

A horizon:
Hue—2.5Y or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Structure—platy; massive in some pedons
Consistence—slightly hard or hard, slightly sticky or sticky, and slightly plastic or plastic
Reaction—moderately alkaline to very strongly alkaline
Other features—slightly effervescent to violently effervescent

C horizon:
Hue—2.5Y or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Structure—platy, angular blocky, prismatic; massive in some pedons
Reaction—strongly alkaline or very strongly alkaline
Other features—strongly effervescent or violently effervescent

Cq and Cqk horizons:
Hue—2.5Y or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Cementation—20 to 40 percent durinodes; as much as 70 percent weak discontinuous silica cementation in subhorizons of some pedons

Belate Series

The Belate series consists of very deep, well drained soils that formed in colluvium and residuum weathered from rhyolitic tuff and andesite. Belate soils are on convex side slopes of mountains. Slopes are 30 to 75 percent. Mean annual precipitation is about 13 inches, and mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Argixerolls

Typical pedon: Belate very gravelly loam, 15 to 30 percent slopes, in an area of the Belate-Softscrabble-Torro association, in Lander County, south part. Pebbles cover 65 percent and cobbles and stones 15 percent of the soil surface:

A1—0 to 4 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; common very fine vesicular pores; 40 percent pebbles, 5 percent cobbles; neutral (pH 7.2); clear smooth boundary. (1 to 4 inches thick)

A2—4 to 14 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; many very fine and few medium tubular pores; 30 percent pebbles; mildly alkaline (pH 7.4); clear wavy boundary. (4 to 10 inches thick)

Bt1—14 to 19 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores; few thin clay films on peds; 35 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.6); gradual wavy boundary. (5 to 7 inches thick)

Bt2—19 to 47 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, friable, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; 40 percent pebbles; common moderately thick and many thin clay films on peds; 35 percent pebbles, 15 percent cobbles; mildly alkaline (pH 7.6); gradual wavy boundary. (10 to 28 inches thick)

Bt3—47 to 60 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong fine angular blocky structure; hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; few moderately thick and common thin clay films on faces of peds; 40 percent pebbles, 15 percent cobbles; noneffervescent matrix; few thin lime coatings on undersides of rock fragments; mildly alkaline (pH 7.8).

Type location: Lander County, Nevada, north part; about 32 miles west of Austin, approximately 1,000 feet west and 700 feet north of the apparent southeast corner of sec. 15, T. 17 N., R. 38 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from mid-July through October; in most years the moisture distribution limits depth of wetting to about 15 to 20 inches

Soil temperature: 43 to 47 degrees F

Mollic epipedon thickness: 10 to 20 inches, includes the upper part of the argillic horizon

Solum thickness and depth to bedrock: 60 to 80 inches

Control section: Clay content—18 to 30 percent; content of rock fragments—35 to 50 percent, mainly pebbles

Reaction throughout the profile: Neutral or mildly alkaline

A horizon:

Value—4 or 5 dry, 2 or 3 moist
Chroma—1, 2, or 3 dry or moist
Structure—weak or moderate, fine or medium subangular blocky or thin or medium platy

Bt horizon:

Value—5 or 6 dry, 2, 3, or 4 moist
Chroma—3 or 4
Texture—very gravelly loam or very gravelly clay loam
Clay content—18 to 30 percent
Rock fragments—35 to 60 percent, mainly pebbles
Structure—fine or medium subangular blocky or angular blocky; Bt3 horizon massive in some pedons

Beoska Series

The Beoska series consists of very deep, well drained soils that formed in loess over loamy and gravelly alluvium derived from mixed sources. Beoska soils are on fan piedmonts and fan piedmont remnants. Slopes are 0 to 8 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Duric Natrargids

Typical pedon: Beoska silt loam, 0 to 2 percent slopes:

A1—0 to 5 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate very thin and thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and few fine roots; many vesicular and very fine tubular pores; 20 percent pebbles on immediate surface; moderately alkaline (pH 8.0); clear wavy boundary. (4 to 7 inches thick)

A2—5 to 9 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium and coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine tubular pores; less than 2 percent pebbles; moderately alkaline (pH 8.2); clear wavy boundary. (0 to 6 inches thick)

AB—9 to 13 inches; mottled very pale brown (10YR 7/2) and light gray (10YR 7/3) silt loam, brown (10YR 4/3) moist; weak coarse prismatic structure; hard, friable, slightly sticky and plastic; few very fine and very few fine roots; many very fine tubular pores; less than 2 percent pebbles; strongly alkaline (pH 8.6); abrupt wavy boundary. (0 to 10 inches thick)

Btn—13 to 18 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 3/3) moist; weak medium and coarse prismatic structure parting to moderate very fine and fine angular blocky; hard, very friable, sticky and very plastic; many very fine and fine roots; common very fine tubular pores; many thin clay films on peds and lining pores; 5 percent 2- to 15-millimeter, rounded pebbles; slightly effervescent; strongly alkaline (pH 8.6); clear irregular boundary. (4 to 13 inches thick)

Btnk—18 to 24 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist;

weak medium and coarse prismatic structure parting to moderate very fine and fine angular blocky; hard, friable, slightly sticky and plastic; many very fine and fine roots; common very fine tubular pores; many thin clay films on peds and in pores; common fine filaments and threads of secondary carbonates and coatings on pebbles; 5 percent 2- to 15-millimeter, rounded pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (0 to 8 inches thick)

2Bqk—24 to 55 inches; light gray (10YR 7/2) gravelly very fine sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine roots; common very fine tubular pores; common fine filaments of secondary carbonates; 25 percent 5- to 15-millimeter, weak and moderate durinodes; 40 percent 2- to 15-millimeter, rounded pebbles; violently effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; approximately 50 miles southwest of Battle Mountain, about 2,200 feet east and 1,200 feet north of the southwest corner of sec. 26, T. 25 N., R. 42 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to 2Bqk horizon: 16 to 26 inches

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry
- Chroma—2 or 3
- Structure—platy, prismatic, or massive

Btn horizon:
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—3 or 4
- Texture—silty clay loam, silt loam, or clay loam
- Clay content—25 to 35 percent
- Rock fragments—up to 15 percent, mainly pebbles
- Reaction—moderately alkaline or strongly alkaline
- Other features—secondary carbonates in some subhorizons

Bqk horizon:
- Value—7 or 8 dry, 4 to 6 moist
- Texture—very fine sandy loam, fine sandy loam, sandy loam
- Clay content—5 to 15 percent
- Rock fragments—15 to 35 percent above 40 inches, 15 to 65 percent below 40 inches, mainly pebbles
- Consistence—soft to hard dry, very friable to firm moist
- Reaction—moderately alkaline or strongly alkaline
- Other features—either 20 to 40 percent durinodes in a friable matrix or weak or strong discontinuous silica cementation

Beowawe Series

The Beowawe series consists of very deep, well drained soils that formed in loess over loamy alluvium derived from mixed rock sources. Beowawe soils are on fan piedmont remnants. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Duric Natrargids

Typical pedon: Beowawe silt loam:

A—0 to 6 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; weak coarse prismatic structure parting to moderate very thin platy; slightly hard, very friable, nonsticky and slightly plastic; common very fine random roots; many very fine vesicular and few very fine tubular pores; moderately alkaline (pH 8.4); clear wavy boundary. (2 to 6 inches thick)

Btn—6 to 11 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and plastic; many very fine random and few fine oblique and horizontal roots; common very fine tubular pores; strongly alkaline (pH 8.6); abrupt wavy boundary. (5 to 11 inches thick)

2Bqk1—11 to 16 inches; very pale brown (10YR 8/3) very fine sandy loam, brown (10YR 4/3) and yellowish brown (10YR 5/4) moist; moderate thin and medium platy structure; hard, firm, nonsticky and slightly plastic; many very fine random and very few very fine oblique exped roots; few very fine interstitial and tubular pores; common fine segregated lime in filaments and threads along faces of peds; weak silica cementation; violently effervescent; strongly alkaline (pH 8.8); clear irregular boundary. (5 to 12 inches thick)

2Bqk2—16 to 29 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, slightly sticky and plastic; very few very fine random roots; few very fine tubular pores; about 30 percent 2- to 10-millimeter, moderately strong durinodes; silica coatings bridging sand grains; common fine white (10YR 8/1) and very pale brown (10YR 7/3 moist) lime filaments and threads; violently effervescent; strongly alkaline (pH 8.8); clear irregular boundary. (5 to 14 inches thick)

2Bqk3—29 to 33 inches; very pale brown (10YR 7/3) loam, brown (10YR 4/3) moist; massive; hard,

friable, slightly sticky and slightly plastic; very fine random roots; very fine tubular pores; about 25 percent 2- to 10-millimeter, weak and moderately strong durinodes; common fine lime filaments and threads; gypsum concretions; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (0 to 14 inches thick)

2Bqk4—33 to 60 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; very few very fine random and very few fine oblique roots; few very fine tubular pores; about 25 percent 2- to 10-millimeter, weak and moderately strong durinodes; few fine lime filaments or threads; gypsum concretions; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; about 8 miles east of Battle Mountain, approximately 1,580 feet east and 400 feet south of the northwest corner of sec. 33, T. 32 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in some part for short periods from November through June

Soil temperature: 47 to 53 degrees F

Depth to base of the Btn horizon: 11 to 24 inches

Depth to continuous weakly cemented Bqk horizon: 11 to 24 inches

Control section: Clay content—18 to 25 percent; texture—silt loam or loam; content of rock fragments—up to 20 percent, mainly pebbles; exchangeable sodium—15 to 35 percent

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—weak or moderate platy or prismatic; or massive
- Other features—effervescent in some pedons because of recharge from calcareous dust

Btn horizon:
- Hue—10YR or 7.5YR
- Value—5 to 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Structure—weak or moderate prismatic or columnar that parts to weak or moderate, fine to coarse angular blocky or subangular blocky
- Other features—slightly effervescent in the lower part of the horizon in some pedons; few to common, fine and medium secondary carbonate segregations in some pedons

2Bqk horizon:
- Value—5 to 8 dry, 4 to 6 moist
- Chroma—2 to 4
- Texture—loam, very fine sandy loam, or loamy sand
- Consistence—hard or very hard dry, friable or firm moist
- Reaction—strongly alkaline or very strongly alkaline
- Lime and silica—common to many, coarse to very coarse white lime coatings on very thin discontinuous silica laminae; 20 to 40 percent brittle durinodes in friable subhorizons
- Other features—pockets and thin strata of slightly hard and friable material in the weakly cemented subhorizon in some pedons

Beowawe Variant

The Beowawe Variant consists of very deep, well drained soils that formed in alluvium derived from mixed rock sources. Beowawe Variant soils are on fan piedmonts. Slopes are 4 to 8 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Natrargids

Typical pedon: Beowawe Variant silt loam, 4 to 8 percent slopes, in an area of the Beowawe Variant-Tomera-Whirlo association:

A1—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, dark brown (10YR 3/3) moist; moderate very thin and thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.0); gradual wavy boundary. (1 to 3 inches thick)

A2—3 to 7 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin and medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine vesicular and few very fine tubular pores; 5 percent pebbles; moderately alkaline (pH 8.2); clear wavy boundary. (2 to 6 inches thick)

Btn—7 to 17 inches; light yellowish brown (10YR 6/4) gravelly clay loam, brown (10YR 4/3) moist; strong medium and coarse prismatic structure parting to strong fine and medium subangular blocky; hard, firm, sticky and plastic; common fine and few very fine roots; few very fine tubular pores; common moderately thick clay films on faces of peds; 15 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary. (6 to 12 inches thick)

Btnk—17 to 25 inches; light yellowish brown (10YR 6/4)

gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine roots; few very fine tubular pores; few thin clay films on faces of peds; 15 percent pebbles, 5 percent cobbles; common soft lime threads; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (5 to 10 inches thick)

2Ck—25 to 60 inches; brown (10YR 5/3) extremely gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; single grained; loose, nonsticky and nonplastic; few very fine roots; many very fine and fine interstitial pores; 60 percent pebbles, 10 percent cobbles; violently effervescent; strongly alkaline (pH 9.0).

Type location: Lander County, Nevada; approximately 15 miles south of Battle Mountain, about 1,500 feet south and 1,500 feet east of the northwest corner of sec. 31, T. 29 N., R. 44 E.

Range in Characteristics

Soil moisture: Usually dry, moist for short periods in winter and spring

Soil temperature: 48 to 52 degrees F

Depth to 2Ck horizon: 18 to 31 inches

A horizon:
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—2 or 3
- Reaction—Mildly alkaline or moderately alkaline

Btn horizon:
- Value—5 or 6 dry
- Chroma—2 to 4 dry, 3 or 4 moist
- Clay content—27 to 35 percent
- Rock fragments—15 to 25 percent, mainly pebbles
- Reaction—strongly alkaline or very strongly alkaline

2Ck horizon:
- Rock fragments—60 to 70 percent, mainly pebbles
- Reaction—strongly alkaline or very strongly alkaline

Berning Series

The Berning series consists of very deep, well drained soils that formed in alluvium derived from mixed rock sources. Berning soils are on side slopes of fan piedmont remnants. Slopes are 15 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 45 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Xerollic Haplargids

Typical pedon: Berning extremely cobbly loam, 15 to 30 percent slopes, in an area of the Berning-Alley association. Pebbles cover 50 percent and cobbles 15 percent of the soil surface:

A1—0 to 5 inches; brown (10YR 5/3) extremely cobbly loam, dark brown (10YR 4/3) moist; weak very thin platy structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine and few medium roots; many very fine and fine vesicular and few very fine and fine interstitial pores; 35 percent pebbles, 25 percent cobbles, 3 percent stones; neutral (pH 6.8); clear smooth boundary. (2 to 9 inches thick)

A2—5 to 9 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; common very fine and fine interstitial and few very fine tubular pores; 35 percent pebbles; neutral (pH 6.8); clear smooth boundary. (0 to 7 inches thick)

Bt1—9 to 12 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine, fine, and medium and common coarse roots; common very fine tubular and few very fine interstitial pores; 50 percent pebbles, 5 percent cobbles; common moderately thick clay films on faces of peds; neutral (pH 7.0); abrupt smooth boundary. (3 to 7 inches thick)

Bt2—12 to 18 inches; yellowish brown (10YR 5/6) very gravelly clay loam, dark yellowish brown (10YR 4/6) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; few very fine tubular pores; many thick clay films on faces of peds; 50 percent pebbles, 5 percent cobbles; neutral (pH 7.2); gradual smooth boundary. (4 to 10 inches thick)

Bt3—18 to 40 inches; yellowish brown (10YR 5/6) very gravelly clay, dark yellowish brown (10YR 4/6) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; many thick clay films on faces of peds; 50 percent pebbles, 5 percent cobbles; neutral (pH 7.2); gradual smooth boundary. (8 to 22 inches thick)

Bt4—40 to 60 inches; yellowish brown (10YR 5/6) extremely gravelly sandy clay loam, dark yellowish brown (10YR 4/6) moist; moderate medium and coarse subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; few very fine tubular pores; 60 percent pebbles, 10 percent cobbles; many moderately thick clay films on faces of peds; neutral (pH 7.2).

Type location: Lander County, Nevada; about 22 miles southeast of Battle Mountain, approximately 2,000 feet north and 2,000 feet east of the southwest corner of sec. 16, T. 29 N., R. 47 E.

Range in Characteristics

Soil moisture: Usually dry, moist in some part from late October through early June
Soil temperature: 47 to 52 degrees F
Depth to base of Bt horizon: 40 to more than 60 inches
Control section: Clay content—35 to 45 percent
Content of rock fragments: 50 to 75 percent, mainly pebbles

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Structure—weak or moderate, very thin platy or fine or medium subangular blocky; massive in some pedons
Consistence—soft or slightly hard dry; very friable or friable moist; nonsticky or slightly sticky, nonplastic or slightly plastic wet
Reaction—slightly acid or neutral

Upper part of Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2, 3, or 4
Texture—very gravelly or extremely gravelly sandy clay or clay loam
Clay content—35 to 45 percent when mixed
Rock fragments—50 to 75 percent, mainly pebbles and some cobbles
Structure—weak or moderate, fine or medium subangular blocky or angular blocky; massive in some pedons
Consistence—hard or very hard dry, friable or firm moist, and plastic or very plastic wet

Lower part of Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Texture—very gravelly or extremely gravelly sandy clay loam or sandy loam
Clay content—15 to 25 percent when mixed
Rock fragments—50 to 75 percent, mainly pebbles and some cobbles
Structure—subangular blocky; massive in some pedons
Consistence—hard or very hard dry, firm or friable moist

Bioya Series

The Bioya series consists of moderately deep, well drained soils formed in loess over alluvium derived from volcanic rock. Bioya soils are on fan piedmont remnants. Slopes are 2 to 8 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Durorthids

Typical pedon: Bioya very fine sandy loam, 2 to 8 percent slopes, in an area of the Bioya-Chiara-Cortez association:

A1—0 to 7 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many fine vesicular pores; mildly alkaline (pH 7.6); clear smooth boundary. (3 to 7 inches thick)

A2—7 to 11 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common fine tubular pores; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 10 inches thick)

Bqk1—11 to 18 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; common very fine and fine roots; common fine tubular pores; 30 percent weakly cemented, 5- to 10-millimeter durinodes; few fine soft masses of lime; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (4 to 13 inches thick)

Bqk2—18 to 29 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few very fine and fine roots; few fine tubular pores; 30 percent weakly cemented, 5- to 10-millimeter durinodes; common fine lime filaments; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (0 to 10 inches thick)

Bqk3—29 to 33 inches; light yellowish brown (10YR 6/4) silt loam, yellowish brown (10YR 5/4) moist; massive; hard, firm, sticky and plastic; very fine and fine roots; few fine tubular pores; 30 percent weakly cemented, 5- to 10-millimeter durinodes; few fine soft masses of lime; slightly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (0 to 12 inches thick)

Bqk4—33 to 38 inches; light yellowish brown (10YR 6/4) silt loam, yellowish brown (10YR 5/6) moist; massive; hard, firm, slightly sticky and plastic; few very fine and fine roots; few fine tubular pores; 50 percent weakly cemented, 5- to 15-millimeter durinodes; slightly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (0 to 8 inches thick)

Bqkm—38 to 60 inches; very pale brown (10YR 8/3) indurated duripan, very pale brown (10YR 7/4) moist; massive; very hard, extremely firm; thin continuous laminar cap; violently effervescent with disseminated lime.

Type location: Lander County, Nevada; about 18 miles north of Battle Mountain, approximately 1,200 feet north and 750 feet east of the southwest corner of sec. 35, T. 35 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to Bqk horizon: 8 to 19 inches
Depth to indurated duripan: 20 to 40 inches
Control section: Clay content—18 to 27 percent
Reaction: Mildly alkaline to very strongly alkaline, becoming more alkaline with depth
Other features: Thin Bw horizon above a depth of 10 inches in some pedons; Bq horizon with no carbonates and value of 8 dry in some pedons

A horizon:
- Value—5 or 6 dry, 3 to 5 moist; more than 5.5 dry and 3.5 moist when the uppermost 7 inches are mixed
- Chroma—2 to 4
- Structure—weak to strong, very thin to thick platy; fine to coarse subangular blocky in the lower part of some pedons
- Reaction—mildly alkaline or moderately alkaline

Bqk horizon:
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—3 to 6
- Texture—silt loam, or loam
- Structure—subangular blocky; massive in some pedons
- Reaction—mildly to very strongly alkaline
- Other features—20 to 50 percent durinodes; or weak discontinuous silica cementation

Bqkm horizon:
- Structure—thick or very thick platy; massive in some pedons

Blacka Series

The Blacka series consists of moderately deep, well drained soils that formed in loess over alluvium derived from mixed rock sources. Blacka soils are on fan piedmont remnants. Slopes are 0 to 8 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Entic Durorthids

Typical pedon: Blacka very fine sandy loam, 0 to 2 percent slopes:

A1—0 to 4 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; moderate coarse prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine roots; many vesicular and common very fine tubular pores; very slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (3 to 7 inches thick)

A2—4 to 8 inches; light gray (10YR 7/2) very fine sandy loam, brown (10YR 4/3) moist; moderate coarse prismatic structure parting to weak thin and medium platy; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine interstitial and few fine tubular pores; strongly alkaline (pH 8.5); clear wavy boundary. (0 to 6 inches)

Bw—8 to 21 inches; light gray (10YR 7/2) fine sandy loam, brown (10YR 4/3) moist; weak coarse and very coarse prismatic structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and few fine roots; many very fine interstitial and tubular pores; strongly alkaline (pH 8.6); abrupt wavy boundary. (6 to 13 inches thick)

Bqkm1—21 to 23 inches; pale brown (10YR 6/3) strongly silica-cemented duripan, dark brown (10YR 3/3) moist; massive, with medium and thick continuous plates; very hard, very firm, brittle; many very fine and few fine and medium roots between plates; common very fine tubular pores; up to 1/16-inch-thick white (10YR 8/2) and light yellowish brown (10YR 6/4 moist) silica laminae on top of plates; slightly effervescent; thick coatings of secondary carbonates on plates; strongly alkaline (pH 8.6); abrupt wavy boundary. (1 to 5 inches thick)

Bqkm2—23 to 31 inches; pale brown (10YR 6/3) strongly silica-cemented duripan, brown (10YR 4/3) moist; few fine faint light yellowish brown (10YR 6/4) mottles; massive, with continuous weak thick plates; very hard, very firm, brittle; few very fine and fine roots; common very fine tubular pores; 30 percent 10- to 20-millimeter, weak durinodes; strongly effervescent; many medium filaments, seams, and coatings of secondary carbonates on plates; strongly alkaline (pH 8.6); clear wavy boundary. (8 to 16 inches thick)

Cqk1—31 to 41 inches; pale brown (10YR 6/3) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, firm, nonsticky and nonplastic;

few very fine roots; common very fine tubular pores; continuous weakly or strongly silica-cemented platelike layers; strongly effervescent; common fine and medium filaments and seams of secondary carbonates; strongly alkaline (pH 8.6); abrupt wavy boundary. (6 to 14 inches thick)

Cqk2—41 to 48 inches; light yellowish brown (10YR 6/4) and very pale brown (10YR 8/3) sandy loam, brown (10YR 4/3) and pale brown (10YR 6/3) moist; many fine distinct dark reddish brown (5YR 3/3 moist) and dark reddish brown (5YR 2/2 moist) relict mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine tubular pores; 25 percent 10- to 20-millimeter, weak and moderately strong durinodes; strongly effervescent; common fine filaments and seams of secondary carbonates; moderately alkaline (pH 8.2); clear wavy boundary. (5 to 12 inches thick)

Cky—48 to 64 inches; reddish yellow (7.5YR 6/6) loam, brown (7.5YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine interstitial and tubular pores; strongly effervescent; many fine and large filaments and seams of secondary carbonates and gypsum; few fine iron and manganese shot; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; approximately 13 miles north of Battle Mountain, about 1,800 feet north and 2,700 feet west of the approximate southeast corner of sec. 19, T. 34 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in part for short periods from October through May

Soil temperature: 47 to 53 degrees F

Depth to strongly cemented duripan: 20 to 26 inches

Depth to base of Bw horizon: 12 to 21 inches

Control section: Clay content—5 to 15 percent; texture—averages fine sandy loam or very fine sandy loam that is 15 to 35 percent fine sand or coarser

Reaction throughout the profile: Moderately alkaline or strongly alkaline

Salt and sodium: Generally not salt and sodium affected above the duripan and strongly salt and sodium affected below; strongly salt and sodium affected throughout in some pedons

Other features: Continuous or discontinuous weakly cemented Bq horizons above the duripan in some pedons

A horizon:
Hue—10YR or 2.5Y
Other features—some pedons are slightly effervescent on the immediate surface because of recharge from calcareous dust

Bw horizon:
Value—6 or 7 dry
Chroma—2 or 3
Texture—fine sandy loam or very fine sandy loam that has thin strata of sandy loam or loam in some pedons

Bqkm horizon:
Consistence—hard or very hard dry
Effervescence—slight to violent

Cqk horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—3 to 6 dry, 3 or 4 moist
Texture—dominantly sandy loam, strata of fine sandy loam or loam in some pedons
Other features—as much as 40 percent durinodes, relict iron mottles in some pedons

Blackhawk Series

The Blackhawk series consists of shallow, well drained soils that formed in loess and mixed alluvium. Blackhawk soils are on fan piedmont remnants. Slopes are 0 to 8 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Entic Durorthids

Typical pedon: Blackhawk very fine sandy loam, 0 to 4 percent slopes, in an area of the Golconda-Blackhawk association:

A—0 to 8 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; moderate very thin platy structure; soft, very friable, nonsticky and nonplastic; many fine and very fine and few medium roots; many fine tubular pores; 3 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 8 inches thick)

Bw—8 to 14 inches; very pale brown (10YR 7/3) loam, brown (10YR 4/3) moist; weak fine and medium subangular structure; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine roots; many fine tubular pores; 3 percent pebbles; slightly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary. (6 to 15 inches thick)

Bqkm—14 to 17 inches; brown (10YR 5/3) strongly silica-cemented duripan, dark brown (10YR 4/3) moist; massive; extremely hard, extremely firm; few fine roots matted on surface of peds; common fine soft lime filaments; violently effervescent; strongly

alkaline (pH 9.0); abrupt smooth boundary. (2 to 5 inches thick)

Bk1—17 to 38 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few fine tubular pores; 5 percent pebbles; few fine soft lime filaments; violently effervescent; very strongly alkaline (pH 8.6); clear smooth boundary. (0 to 21 inches thick)

2Bk2—38 to 47 inches; very pale brown (10YR 7/3) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, nonsticky and nonplastic; few fine roots; few fine tubular pores; 40 percent pebbles; common medium soft lime masses; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 10 inches thick)

3Bk3—47 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable; few fine roots; few fine tubular pores; 70 percent pebbles; common fine soft lime masses; slightly effervescent; moderately alkaline (pH 8.0).

Type location: Lander County, Nevada; about 8 miles north of Battle Mountain, approximately 1,500 feet north and 500 feet east of the southwest corner of sec. 26, T. 33 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and early spring

Soil temperature: 47 to 54 degrees F

Depth to duripan: 14 to 20 inches

Control section: Clay content—averages 5 to 10 percent; content of rock fragments—up to 30 percent, mainly pebbles; silt plus very fine sand—65 to 80 percent

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—weak or moderate, very thin to thick platy; massive in some pedons
- Reaction—mildly alkaline to strongly alkaline

Bw horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Texture—silt loam, loam, very fine sandy loam
- Clay content—averages 5 to 10 percent
- Rock fragments—0 to 30 percent, mainly pebbles
- Structure—weak or moderate, thin or thick platy; subangular blocky; massive in some pedons
- Reaction—mildly alkaline to strongly alkaline

Duripan:
- Consistence—very hard or extremely hard
- Reaction—moderately alkaline to very strongly alkaline
- Silica cementation—duripan consists generally of two or more strongly cemented layers interbedded with weakly silica-cemented material or strata that has friable matrix containing durinodes

Bk horizon:
- Hue—10YR or 2.5Y
- Value—5 to 7 dry, 4 to 6 moist
- Chroma—2 or 3
- Structure—weak to strong, thin or thick platy; massive in some pedons
- Texture—stratified loam, gravelly coarse sandy loam, or gravelly coarse sand

2Bk and 3Bk horizons:
- Texture—unconformable strata of very gravelly or extremely gravelly sand, coarse sand, loamy coarse sand, and sandy loam below a depth of 30 inches
- Other features—strata of clay below a depth of 30 inches in some pedons

Bojo Series

The Bojo series consists of shallow, well drained soils that formed in residuum of extrusive volcanic rocks. Bojo soils are on summits, crests, and side slopes of hills and mountains. Slopes are 8 to 75 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy, mixed, mesic Lithic Haplargids

Typical pedon: Bojo fine sandy loam, 8 to 30 percent slopes, extremely stony, in an area of the Bojo-Stingdorn association:

A1—0 to 2 inches; light brownish gray (10YR 6/2) very stony fine sandy loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; many very fine vesicular pores; moderately alkaline (pH 8.0); abrupt smooth boundary. (2 to 5 inches thick)

A2—2 to 4 inches; light brownish gray (10YR 6/2) fine sandy loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly

sticky and nonplastic; common very fine roots; few very fine tubular and interstitial pores; 10 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (0 to 3 inches thick)

Bt1—4 to 8 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 4/3) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; many very fine interstitial pores; 10 percent pebbles; few thin clay films on faces of peds and lining pores; moderately alkaline (pH 8.0); clear smooth boundary. (3 to 8 inches thick)

Bt2—8 to 10 inches; light yellowish brown (10YR 6/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, friable, very sticky and plastic; common very fine and fine roots; few very fine tubular pores; 10 percent pebbles; common moderately thick clay films on faces of peds and lining pores; moderately alkaline (pH 8.0); abrupt smooth boundary. (0 to 4 inches thick)

R—10 inches; welded tuff.

Type location: Lander County, Nevada; about 20 miles southwest of Battle Mountain, approximately 1,600 feet east and 1,600 feet north of the southwest corner of sec. 2, T. 29 N., R. 42 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from June through October

Soil temperature: 47 to 49 degrees F

Control section: Clay content—18 to 35 percent; content of rock fragments—15 to 35 percent; reaction—mildly alkaline or moderately alkaline; depth to bedrock—5 to 14 inches

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2, 3, or 4

Bt horizon:
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—2, 3, or 4
- Rock fragments—10 to 25 percent, dominantly pebbles
- Textures—loam, clay loam, sandy clay loam, gravelly clay loam, or gravelly loam
- Clay content—25 to 35 percent
- Other features—slightly calcareous in some pedons

Boulflat Series

The Boulflat series consists of moderately deep, well drained soils that formed in some loess high in content of volcanic ash but mainly in residuum and colluvium derived from chert, shale, quartzite, and andesite. Boulflat soils are on crests and side slopes of mountains and hills. Slopes are 4 to 30 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Haploxerollic Durargids

Typical pedon: Boulflat gravelly loam, 4 to 30 percent slopes, in an area of the Boulflat-Havingdon-Dewar association:

A—0 to 6 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine interstitial pores and few very fine tubular pores; 20 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary. (2 to 6 inches thick)

Bt1—6 to 11 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; many very fine and few fine and medium roots; many very fine tubular pores; common thin clay films on faces of peds; 20 percent pebbles; mildly alkaline (pH 7.8); gradual wavy boundary. (4 to 12 inches thick)

Bt2—11 to 23 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; many very fine and few fine, medium, and coarse roots; many very fine tubular pores; common thin clay films on faces of peds; 30 percent pebbles; mildly alkaline (pH 7.8); gradual wavy boundary. (0 to 12 inches thick)

Bqkm—23 to 32 inches; very pale brown (10YR 8/3) strongly cemented duripan with a 0.1- to 1-millimeter-thick, discontinuous laminar cap; very pale brown (10YR 7/4) moist; massive; extremely hard, extremely firm; violently effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary. (4 to 15 inches thick)

R—32 inches; fractured chert.

Type location: Lander County, Nevada; about 10 miles southwest of Battle Mountain, approximately 2,400 feet south and 500 feet west of the northeast corner of sec. 12, T. 31 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in some part from late October through early June

Soil temperature: 47 to 52 degrees F

Depth to strongly cemented duripan: 20 to 34 inches
Depth to hard bedrock: 22 to 40 inches

A horizon:
- Value—5 to 7 dry, 3 or 4 moist
- Chroma—2 or 3
- Structure—weak to strong, very thin to thick platy or granular
- Consistence—soft or slightly hard dry, very friable or friable moist
- Reaction—neutral or mildly alkaline

Bt horizon:
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—gravelly loam, gravelly clay loam, or gravelly sandy clay loam
- Clay content—25 to 35 percent
- Rock fragments—15 to 35 percent, mainly pebbles
- Structure—weak or moderate, very fine to medium subangular or angular blocky
- Reaction—neutral or mildly alkaline

Bqkm horizon:
- Value—7 or 8 dry, 6 to 8 moist
- Chroma—1 to 4
- Effervescence—strong or violent
- Silica laminae—as much as 5 millimeters thick and not continuous horizontally
- Other features—strongly cemented duripan rests directly on bedrock

This pedon is a taxadjunct to the Boulflat series because it does not have a Bk horizon. The Boulflat series has an 8- to 14-inch-thick Bk horizon immediately above the duripan. Use and management are the same.

Bregar Series

The Bregar series consists of shallow, well drained soils that formed in residuum and colluvium derived from igneous flow rocks, tuff, and quartzite. Bregar soils are on crests and upper side slopes of mountains. Slopes are 4 to 75 percent. Mean annual precipitation is about 13 inches, and mean annual temperature is about 42 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Xerollic Haplargids

Typical pedon: Bregar extremely cobbly loam, 4 to 15 percent slopes, in an area of the Bregar-Punchbowl association. Pebbles cover 35 percent and cobbles 35 percent of the soil surface:

A—0 to 4 inches; pale brown (10YR 6/3) extremely cobbly loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and medium roots; many very fine tubular and interstitial pores; 30 percent pebbles, 30 percent cobbles; mildly alkaline (pH 7.4); clear smooth boundary. (2 to 6 inches thick)

Bt1—4 to 8 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine and few medium roots; common very fine interstitial and tubular pores; common thin clay films on faces of peds; 25 percent pebbles, 15 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary. (2 to 6 inches thick)

Bt2—8 to 11 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine angular blocky structure; slightly hard, very friable, sticky and plastic; common very fine and few fine and medium roots; few very fine interstitial and common very fine tubular pores; common thin and few moderately thick clay films on faces of peds; 10 percent pebbles, 45 percent cobbles; neutral (pH 7.3); abrupt broken boundary. (0 to 4 inches thick)

2R—11 inches; fractured rhyolitic tuff; clay coatings on fracture planes.

Type location: Lander County, Nevada; about 38 miles southwest of Battle Mountain, approximately 2,600 feet east of the assumed northwest corner of sec. 10, T. 26 N., R. 42 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 43 to 46 degrees F
Depth to bedrock: 5 to 12 inches
Reaction throughout the profile: Slightly acid to mildly alkaline
Other features: Bw horizon as much as 5 inches thick in some pedons; upper 3 inches of bedrock weathered to various degrees in some pedons

A horizon:
- Value—5 to 7 dry, 3 or 4 moist
- Chroma—2 or 3
- Structure—weak to strong, very fine to medium granular or subangular blocky; thin to medium platy; massive in some pedons
- Consistence—soft or slightly hard dry

Bt horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 3 to 5 moist
- Chroma—2 to 4
- Texture—very gravelly clay loam, very cobbly clay loam, extremely cobbly clay loam, very gravelly sandy clay loam, extremely cobbly sandy clay

loam, or very gravelly loam; extremely gravelly loam in some pedons
Clay content—25 to 35 percent
Rock fragments—35 to 75 percent, mainly pebbles and cobbles with as much as 15 percent stones
Structure—weak or moderate, fine or medium angular or subangular blocky; massive in some pedons
Other features—broken, irregular, or wavy lower boundary

Broyles Series

The Broyles series consists of very deep, well drained soils that formed in a thin loess mantle over mixed loamy alluvium. Broyles soils are on fan skirts, inset fan remnants, and fan aprons. Slopes are 0 to 8 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Duric Camborthids

Typical pedon: Broyles very fine sandy loam, 0 to 2 percent slopes:

A—0 to 5 inches; light brownish gray (10YR 6/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and common medium oblique roots; many very fine vesicular pores; moderately alkaline (pH 8.4); abrupt wavy boundary. (3 to 7 inches thick)

Bw—5 to 11 inches; light gray (10YR 7/2) very fine sandy loam, dark brown (10YR 4/3) moist; yellowish brown (10YR 5/4) stains on faces of peds; weak and moderate medium and thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; very fine vesicular, interstitial, and tubular pores; strongly alkaline (pH 8.6); abrupt wavy boundary. (4 to 21 inches thick)

2Bk—11 to 15 inches; light gray (10YR 7/2) sandy loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine random and very few medium oblique roots; many very fine vesicular, interstitial, and tubular pores; about 1 percent 15- to 30-millimeter, hard, firm, brittle durinodes; very slightly effervescent matrix, strongly effervescent in spots; very strongly alkaline (pH 9.2); abrupt wavy boundary. (0 to 12 inches thick)

2Bqk—15 to 19 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular, interstitial, and tubular pores; about 25 percent 10- to 25-millimeter, hard, firm, brittle durinodes; common fine lime filaments and threads; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary. (4 to 26 inches thick)

2Bqky1—19 to 28 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; very few very fine roots; common very fine vesicular, interstitial, and tubular pores; about 30 percent 15- to 30-millimeter, hard, firm, brittle durinodes; few fine gypsum crystal filaments, threads, and seams up to 3 inches wide; slightly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary. (0 to 14 inches thick)

3Bqky2—28 to 44 inches; pale brown (10YR 6/3) loamy sand, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; very few very fine roots; common very fine vesicular, interstitial, and tubular pores; about 20 percent 20- to 35-millimeter, hard, firm, brittle durinodes; common fine gypsum crystal filaments, threads, and seams up to 3 inches wide; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 16 inches thick)

3Cq—44 to 60 inches; very pale brown (10YR 7/3) loamy fine sand, brown (10YR 4/3) moist; massive; hard, firm, nonsticky and nonplastic; common very fine tubular pores; silica cementation bridging sand grains; nonbrittle when wet; strongly alkaline (pH 8.8).

Type location: Lander County, Nevada; about 21 miles south of Battle Mountain, approximately 3,420 feet east and 700 feet north of the southwest corner of sec. 30, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 55 degrees F
Depth to Bk or Bqk horizon: 10 to 24 inches
Control section: Clay content—5 to 15 percent; texture—fine sandy loam, very fine sandy loam, or silt loam in the upper part and loam, fine sandy loam, sandy loam, and loamy sand in the lower part; content of rock fragments—0 to 35 percent pebbles, mostly in the lower part
Other features: Strongly cemented duripans below a depth of 40 inches in some pedons

A horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3
Structure—weak or moderate, thin to thick platy; massive in some pedons
Reaction—moderately alkaline or strongly alkaline
Carbonates—normally noncalcareous, effervescent in some pedons because of recharge from dust

Bw horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Structure—weak fine or medium subangular blocky; platy; prismatic; massive in some pedons
Reaction—moderately alkaline or strongly alkaline

2Bqk horizon:
Reaction—strongly alkaline or very strongly alkaline
Cementation—20 to 75 percent durinodes, very weak silica cementation in the matrix surrounding the durinodes in some pedons
Other features—few or common fine gypsum filaments or seams in some pedons

3C horizon:
Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—1 to 4
Reaction—strongly alkaline or very strongly alkaline

Bubus Series

The Bubus series consists of very deep, well drained soils that formed in alluvium derived from mixed rock sources of mostly volcanic origin that are high in content of pyroclastic materials. Bubus soils are on alluvial flat remnants and lake plain terraces. Slopes are 0 to 4 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents

Typical pedon: Bubus very fine sandy loam:

A—0 to 6 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and nonplastic; many very fine, fine, and medium vesicular and many very fine interstitial pores; 10 percent fine pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (2 to 10 inches thick)

C1—6 to 10 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak very thin and thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine and medium roots; few very fine interstitial and common very fine tubular pores; 5 percent fine pebbles; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (3 to 11 inches thick)

C2—10 to 15 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; moderate very thin and thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; common very fine interstitial and tubular pores; 5 percent fine pebbles; violently effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (5 to 8 inches thick)

Cqk1—15 to 29 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; few fine faint brown (7.5YR 5/4 and 4/4 moist) mottles; massive; slightly hard and hard, very friable, slightly sticky and slightly plastic; few very fine to medium roots; common very fine tubular pores; 3 percent pebbles; 35 percent 2- to 35-millimeter, hard, firm and very firm, brittle durinodes; fine filaments and threads of gypsum; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary. (7 to 16 inches thick)

Cqk2—29 to 60 inches; very pale brown (10YR 7/4) very fine sandy loam, yellowish brown (10YR 5/4) moist; few fine distinct yellowish brown (10YR 5/6 moist) and few fine faint dark yellowish brown (10YR 4/4 moist) mottles; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; 3 percent fine pebbles; 35 percent 2- to 30-millimeter, hard, firm, brittle durinodes; fine filaments and threads of gypsum; violently effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; approximately 1.6 miles southeast of Battle Mountain, about 2,100 feet south and 1,750 feet east of the northwest corner of sec. 28, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 53 degrees F
Control section: Clay content—10 to 15 percent; content of rock fragments—0 to 5 percent pebbles
Salt and sodium: Normally strongly affected throughout, but moderately or slightly affected in the upper horizons in some pedons
Other features: Faint or distinct iron mottles and gypsum segregations below a depth of 10 inches in some pedons

A horizon:
Value—6 or 7 dry, 4 or 5 moist

Chroma—2, 3, or 4
Structure—platy or massive
Consistence—nonsticky or slightly sticky, nonplastic or slightly plastic
Reaction—moderately alkaline to very strongly alkaline
Effervescence—slightly, strongly, or violently effervescent

C horizon:
Value—6 or 7 dry, 4 to 6 moist
Chroma—2 to 4
Texture—loam, silt loam, very fine sandy loam, fine sandy loam, or sandy loam, dominantly very fine sandy loam
Structure—platy; massive in some pedons
Reaction—moderately alkaline to very strongly alkaline, commonly becoming less alkaline with depth
Effervescent—strongly or violently effervescent

Cqk horizon:
Reaction—moderately alkaline to very strongly alkaline
Other features—20 to 70 percent durinodes

2C horizon (where present):
Stratified sand and gravel below a depth of 40 inches in some pedons

Bucan Series

The Bucan series consist of deep, well drained soils formed in loess high in content of volcanic ash over residuum of weathered volcanic rocks and tuff. Bucan soils are on side slopes of mountains. Slopes are 15 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Fine, montmorillonitic, frigid Xerollic Haplargids

Typical pedon: Bucan cobbly loam, 15 to 30 percent slopes, in an area of the Bucan-Bucan, steep, association. Cobbles cover 15 percent of the soil surface:

A1—0 to 3 inches; pale brown (10YR 6/3) cobbly loam, brown (10YR 4/3) moist; weak thin and very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; common fine tubular and interstitial pores; 15 percent pebbles, 15 percent cobbles; neutral (pH 7.0); clear smooth boundary. (2 to 6 inches thick)

A2—3 to 5 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, very friable, sticky and plastic; many fine and very fine and few medium roots; common very fine tubular and many fine interstitial pores; neutral (pH 6.8); abrupt smooth boundary. (0 to 7 inches thick)

Bt1—5 to 8 inches; pale brown (10YR 6/3) clay, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and very plastic; common very fine and fine roots; many very fine tubular pores; 10 percent pebbles; continuous thick clay films on faces of peds; mildly alkaline (pH 7.6); clear wavy boundary. (3 to 10 inches thick)

Bt2—8 to 15 inches; dark yellowish brown (10YR 4/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; very hard, very firm, very sticky and very plastic; common very fine roots; common very fine tubular pores; 10 percent pebbles; continuous thick clay films on faces of peds; mildly alkaline (pH 7.6); clear wavy boundary. (7 to 15 inches thick)

Btk1—15 to 23 inches; dark yellowish brown (10YR 4/6) gravelly clay, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, very sticky and very plastic; common very fine and few fine roots; common very fine tubular pores; 20 percent pebbles; lime coatings on underside of pebbles; strongly effervescent; moderately alkaline (pH 8.0); gradual wavy boundary. (8 to 18 inches thick)

2Btk2—23 to 42 inches; dark yellowish brown (10YR 4/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and very plastic; common very fine roots; common very fine and few fine tubular pores; 30 percent pebbles; lime coatings on underside of rocks; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary. (0 to 20 inches thick)

R—42 inches; basalt.

Type location: Lander County, Nevada; about 15 miles southeast of Battle Mountain, approximately 2,500 feet north and 1,400 feet west of the southeast corner of sec. 15, T. 30 N., R. 47 E.

Range in Characteristics

Soil moisture: Usually dry, moist in part from late October through early June
Soil temperature: 45 to 47 degrees F
Solum thickness and depth to bedrock: 40 to 60 inches
Control section: Clay content—45 to 60 percent; content of rock fragments—as much as 15 percent when mixed; depth to segregated lime—15 to 30 inches

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3

Structure—weak or moderate, very thin to medium platy or fine or medium granular or subangular blocky; massive in some pedons
Consistence—soft or slightly hard dry
Other features—when mixed to a depth of 7 inches, the dry value is 6 or the thickness of the epipedon is less than one-third the solum thickness

Bt horizon:
Value—4 to 6 dry, 3 to 5 moist
Chroma—2 to 4
Clay content—45 to 60 percent
Rock fragments—up to 15 percent
Structure—weak to strong, fine or medium subangular or angular blocky in the Bt1, moderate or strong, fine or medium prismatic in the Bt2
Reaction—neutral or mildly alkaline

Btk horizon:
Value—4 to 6 dry, 4 or 5 moist
Chroma—3 to 6
Texture—gravelly clay loam, gravelly clay, or cobbly clay
Clay content—35 to 45 percent
Rock fragments—15 to 35 percent, mainly pebbles that have cobbles common in some subhorizons
Structure—medium or fine angular blocky; prismatic; massive in some pedons
Reaction—mildly alkaline to strongly alkaline

Buffaran Series

The Buffaran series consists of shallow, well drained soils that formed in alluvium derived from mixed rock sources. Buffaran soils are on fan piedmonts, mountain valley fans, and ballenas. Slopes are 2 to 8 percent. Mean annual precipitation is about 10 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Clayey, montmorillonitic, mesic, shallow Xerollic Durargids

Typical pedon: Buffaran cobbly loam, 2 to 8 percent slopes, in an area of the Buffaran-Wieland association. Pebbles cover 25 percent and cobbles 5 percent of the soil surface:

A1—0 to 2 inches; pale brown (10YR 6/3) cobbly loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; few medium roots; many very fine interstitial and tubular pores; 10 percent pebbles, 10 percent cobbles; neutral (pH 7.2); abrupt smooth boundary. (1 to 5 inches thick)

A2—2 to 4 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; common fine roots; many very fine and fine tubular pores; 10 percent pebbles, 10 percent cobbles; neutral (pH 7.2); abrupt smooth boundary. (0 to 4 inches thick)

Bt1—4 to 8 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine prismatic structure parting to strong medium granular; slightly hard, friable, sticky and plastic; common fine and medium roots; many very fine and fine tubular pores; common moderately thick clay films on peds; 15 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.4); abrupt smooth boundary. (0 to 4 inches thick)

Bt2—8 to 13 inches; yellowish brown (10YR 5/4) gravelly clay, dark brown (10YR 4/3) moist; strong medium prismatic structure parting to moderate fine subangular blocky; hard, firm, very sticky and very plastic; few fine and medium roots; many very fine and fine tubular pores; few thick and many thin clay films on peds and in pores; 15 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.6); clear wavy boundary. (3 to 8 inches thick)

Bt3—13 to 15 inches; yellowish brown (10YR 5/4) gravelly clay, dark brown (10YR 4/3) moist; strong fine angular blocky structure; hard, firm, very sticky and very plastic; few thick and many thin clay films on peds and in pores; 15 percent pebbles; mildly alkaline (pH 7.6); abrupt wavy boundary. (2 to 7 inches thick)

Bqkm—15 to 60 inches; white (10YR 8/2) indurated duripan, very pale brown (10YR 7/3) moist; massive; 2- to 6-millimeter, horizontal silica laminae capping and within matrix; extremely hard, extremely firm; 30 percent pebbles, 25 percent cobbles, 10 percent stones; violently effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; about 25 miles south of Battle Mountain, approximately 1,750 feet east and 3,000 feet south of the northwest corner of sec. 26, T. 28 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to duripan: 14 to 20 inches

A horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist; more than 5.5 dry after mixing the uppermost 7 inches
Chroma—2 or 3

Structure—subangular blocky or platy

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2, 3, 4, or 6
Clay content—35 to 50 percent
Texture—clay or clay loam
Rock fragments—10 to 30 percent, mostly gravel
Reaction—neutral or mildly alkaline

Bq horizon (where present):
Texture—loam or clay loam
Rock fragments—20 to 40 percent strongly cemented duripan fragments
Reaction—neutral to moderately alkaline
Effervescence—noneffervescent to strongly effervescent

Burnborough Series

The Burnborough series consists of very deep, well drained soils that formed in residuum and colluvium dominantly derived from andesitic and rhyolytic rock. Burnborough soils are on side slopes of mountains. Slopes are 15 to 75 percent. Mean annual precipitation is about 14 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Argixerolls

Typical pedon: Burnborough very gravelly loam, 30 to 50 percent slopes, in an area of the Burnborough-Sumine-Burrita association. Pebbles cover 35 percent and cobbles 5 percent of the soil surface:

A1—0 to 3 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine vesicular pores; 40 percent pebbles; neutral (pH 7.0); abrupt smooth boundary. (3 to 8 inches thick)

A2—3 to 10 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine and fine vesicular pores; 25 percent pebbles; neutral (pH 6.8); clear smooth boundary. (3 to 8 inches thick)

Bt1—10 to 16 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; few thin clay films on faces of peds; 40 percent pebbles; neutral (pH 7.0); clear smooth boundary. (0 to 10 inches thick)

Bt2—16 to 26 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; few thin clay films on faces of peds; 45 percent pebbles; neutral (pH 7.2); clear wavy boundary. (8 to 16 inches thick)

Bt3—26 to 36 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores; common thin clay films on peds faces; 55 percent pebbles; neutral (pH 7.2); gradual wavy boundary. (0 to 12 inches thick)

Bt4—36 to 60 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; few very fine tubular pores; common thin clay films on faces of peds; 55 percent pebbles; neutral (pH 7.3).

Type location: Lander County, Nevada; about 40 miles southwest of Battle Mountain, approximately 2,000 feet south and 500 feet west of the northeast corner of sec. 14, T. 27 N., R. 40 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry in summer and fall; depth of wetting exceeds 30 inches in most years
Soil temperature: 42 to 46 degrees F
Depth to bedrock: 60 to 80 inches
Mollic epipedon: 10 to 20 inches thick and includes the Bt1 horizon
Reaction throughout the profile: Slightly acid or neutral throughout

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3

Bt1 horizon:
Value—4 or 5 dry
Chroma—2 or 3
Texture—very gravelly sandy loam or very gravelly loam
Clay content—18 to 25 percent
Rock fragments—35 to 50 percent, mainly pebbles

Bt2 and Bt3 horizons:
Value—5 or 6 dry, 3, 4, or 5 moist
Chroma—3 or 4 dry

Texture—very gravelly loam or very gravelly clay loam
Clay content—18 to 35 percent
Rock fragments—35 to 60 percent, mainly pebbles

C horizon (where present):
Value—5 or 6 dry, 4 or 5 moist
Chroma—2 to 6
Texture—loam to loamy sand
Rock fragments—35 to 75 percent, mainly pebbles

Burrita Series

The Burrita series consists of shallow, well drained soils formed in residuum and colluvium of interbedded chert, quartzite, sandstone, and shale. Burrita soils are on crests and side slopes of hills and mountains. Slopes are 4 to 75 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic, Lithic Xerollic Haplargids

Typical pedon: Burrita very cobbly loam, 4 to 15 percent slopes, in an area of the Trunk-Burrita-Rock outcrop association:

A—0 to 3 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many fine and common medium vesicular pores; 20 percent pebbles, 25 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 5 inches thick)

Bt1—3 to 6 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine and few medium tubular pores; 30 percent pebbles, 5 percent cobbles; common thin and few moderately thick clay films on faces of peds and lining pores; moderately alkaline (pH 8.0); clear smooth boundary. (0 to 5 inches thick)

Bt2—6 to 13 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, firm, sticky and plastic; common fine and few fine and medium roots; common fine and few medium tubular pores; 30 percent pebbles, 5 percent cobbles; common moderately thick clay films on faces of peds and lining pores; moderately alkaline (pH 8.2); clear wavy boundary. (7 to 10 inches thick)

Bt3—13 to 18 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, friable, very sticky and very plastic; few fine and medium roots; few fine and medium tubular pores; 30 percent pebbles, 20 percent cobbles; common moderately thick clay films on faces of peds and lining pores; moderately alkaline (pH 8.2); abrupt smooth boundary. (0 to 5 inches thick)

R—18 inches; quartzite.

Type location: Lander County, Nevada; about 22 miles south of Battle Mountain, approximately 2,400 feet south and 2,600 feet west of the approximate northeast corner of sec. 28, T. 28 N., R. 44 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 50 degrees F
A and Bt thickness and depth to bedrock: 14 to 20 inches
Control section: Clay content—35 to 50 percent; content of rock fragments—35 to 60 percent when mixed, mainly pebbles, cobbles, or stones
Reaction throughout the profile: Moderately alkaline or strongly alkaline

A horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2, 3, or 4
Consistence—soft or slightly hard

Bt horizon:
Hue—10YR or 7.5 YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 to 6
Texture—very gravelly clay, very cobbly clay, very stony clay, very gravelly clay loam, very cobbly clay loam, very stony clay loam
Structure—subangular or angular blocky; massive in some pedons

Caniwe Series

The Caniwe series consists of very deep, well drained soils that formed in loess and alluvium derived from mixed rock sources. Caniwe soils are on inset fans within mountain valley fans. Slopes are 2 to 8 percent. Mean annual precipitation is about 11 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-silty, mixed, mesic Aridic Duric Haploxerolls

Typical pedon: Caniwe silt loam, 2 to 8 percent slopes, in an area of the Handy-Caniwe-Zoesta association:

A1—0 to 4 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; common very fine tubular pores; neutral (pH 7.0); abrupt smooth boundary. (3 to 6 inches thick)

A2—4 to 9 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate thin platy; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium roots; common very fine tubular pores; neutral (pH 7.3); clear smooth boundary. (4 to 10 inches thick)

A3—9 to 17 inches; grayish brown (10YR 5/2) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; common very fine tubular pores; neutral (pH 7.2); gradual wavy boundary. (0 to 8 inches thick)

2Cq1—17 to 29 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, very friable, very sticky and very plastic; few very fine roots; common very fine tubular pores; 40 percent 5- to 15-millimeter, weakly cemented durinodes; mildly alkaline (pH 7.4); gradual wavy boundary. (6 to 12 inches thick)

2Cq2—29 to 40 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, very friable, sticky and plastic; few very fine roots; common very fine tubular pores; 55 percent 5- to 15-millimeter, weakly cemented durinodes; mildly alkaline (pH 7.6); clear wavy boundary. (6 to 28 inches thick)

3Ck—40 to 60 inches; very pale brown (10YR 7/3) silt loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, sticky and plastic; very few very fine roots; few very fine tubular pores; common strongly effervescent fine lime seams and filaments; noneffervescent matrix; moderately alkaline (pH 8.0).

Type location: Lander County, Nevada; approximately 35 miles south of Battle Mountain, about 600 feet north and 1,200 feet east of the southwest corner of sec. 8, T. 25 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Mollic epipedon thickness: 10 to 19 inches
Depth to Cq horizon: 14 to 26 inches
Depth to carbonates: 30 to 46 inches
Control section: Clay content—20 to 35 percent; content of rock fragments—less than 5 percent; texture—silt loam or silty clay loam, thin strata of clay loam or loam in some pedons

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3

2Cq horizon:
Value—3 or 4 moist
Chroma—2 to 4
Reaction—mildly alkaline or moderately alkaline
Durinodes—25 to 60 percent weakly silica cemented in a very friable or friable matrix

Chen Series

The Chen series consists of shallow, well drained soils that formed in residuum and colluvium weathered from volcanic rocks and chert with a component of loess high in content of volcanic ash. Chen soils are on crests and side slopes of hills and mountains. Slopes are 2 to 30 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls

Typical pedon: Chen very gravelly loam, 4 to 15 percent slopes, in an area of the Chen-Slaven-Chen, cobbly association:

A1—0 to 3 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 10 percent cobbles, 35 percent pebbles; mildly alkaline (pH 6.6); clear smooth boundary. (2 to 6 inches thick)

A2—3 to 10 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine and common medium roots; many very fine and fine tubular pores; 10 percent cobbles, 30 percent pebbles; mildly alkaline (pH 7.6); abrupt smooth boundary. (2 to 7 inches thick)

Bt—10 to 16 inches; yellowish brown (10YR 5/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, firm, very sticky and very plastic; many very fine and fine roots in cracks; few fine tubular and many fine and very fine interstitial pores; few fine tubular pores; 30 percent cobbles, 25 percent pebbles; thin

clay films on faces of peds; mildly alkaline (pH 8.0); abrupt smooth boundary. (2 to 7 inches thick)
2R—16 inches; fractured andesite.

Type location: Lander County, Nevada; about 8 miles northeast of Battle Mountain, approximately 1,500 feet south and 1,600 feet east of the northwest corner of sec. 15, T. 33 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 43 to 47 degrees
Mollic epipedon thickness: 7 to 15 inches, generally includes the upper part of the argillic horizon
Depth to bedrock: 12 to 20 inches
Reaction throughout the profile: Slightly acid to mildly alkaline

A horizon:
Value—4 to 6 dry, less than 5.5 when the uppermost 7 inches is mixed; 2 or 3 moist
Chroma—2 or 3
Structure—weak or moderate, medium or thin platy, or very fine to medium granular or subangular blocky

Bt horizon:
Hue—7.5YR or 10YR; 5YR in some pedons having high iron concentrations in the parent material
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4
Texture—very gravelly clay, extremely gravelly clay, very cobbly clay, extremely cobbly clay; thin Bt1 horizon of very gravelly clay loam that is 35 to 40 percent clay in some pedons
Clay—40 to 55 percent
Rock fragments—40 to 65 percent pebbles and cobbles, generally increasing with depth
Structure—weak to strong, fine or medium angular or subangular blocky; platy

Cherry Spring Series

The Cherry Spring series consists of moderately deep, well drained soils that formed in loess high in content of volcanic ash over alluvium derived from mixed rock sources. Cherry Spring soils are on fan piedmont remnants. Slopes are 2 to 8 percent. Mean annual precipitation is about 8 inches, and mean annual air temperature is about 46 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Haploxerollic Durargids

Typical pedon: Cherry Spring very fine sandy loam, 2 to 8 percent slopes, in an area of the Cherry Spring-Enko association:

A1—0 to 3 inches; light gray (10YR 7/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; strong thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 6 inches thick)
A2—3 to 7 inches; pale brown (10YR 6/3) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 6 inches thick)
Bt—7 to 13 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure that parts to moderate medium subangular blocky; hard, friable, sticky and plastic; many very fine and fine and few medium roots; many very fine tubular pores; 5 percent pebbles; few thin clay films on faces of peds; moderately alkaline (pH 8.4); clear smooth boundary. (4 to 15 inches thick)
Btqk—13 to 29 inches; brownish yellow (10YR 6/6) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few thin clay films on faces of peds; many very fine and fine roots; common very fine tubular pores; 10 percent pebbles; 40 percent durinodes less than 5 millimeters in size; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (5 to 15 inches thick)
2Bqkm—29 to 41 inches; very pale brown (10YR 7/4) strongly cemented duripan, yellowish brown (10YR 5/4) moist; 70 percent pebbles; violently effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (5 to 15 inches thick)
2Bqk—41 to 60 inches; very pale brown (10YR 8/3) gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 25 percent pebbles; 20 percent durinodes; common large lime seams, common fine lime concretions; bottom of pebbles coated with lime; violently effervescent; very stongly alkaline (pH 9.4).

Type location: Lander County, Nevada; about 20 miles northeast of Battle Mountain, approximately 1,700 feet west and 2,400 feet north of the southeast corner of sec. 36, T. 36 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 51 degrees

Combined thickness of A and Bt horizons: 20 to 40 inches
Depth to the strongly cemented duripan: 20 to 40 inches
Control section: Clay—20 to 35 percent; texture—loam, silt loam, clay loam; rock fragments—0 to 15 percent
Other features: Substrata of contrasting textures below the duripan in some pedons

A horizon:
Value—5, 6, or 7 dry, greater than 5.5 when mixed; 3 or 4 moist
Chroma—2 or 3
Structure—weak to strong, thin to thick platy; subangular blocky; or massive
Reaction—neutral or mildly alkaline

Bt horizon:
Hue—10YR or 7.5YR
Chroma—3 to 6
Structure—weak or moderate, fine to coarse prismatic parting to subangular blocky
Reaction—mildly alkaline to strongly alkaline, becoming more alkaline with depth

Btqk horizon:
Hue—10YR or 7.5YR
Structure—subangular blocky; massive in some pedons
Reaction—mildly alkaline to strongly alkaline
Other features—weakly silica cemented or 20 to 40 percent durinodes in a friable matrix
Carbonates—few to many lime filaments or soft masses; slightly to violently effervescent

Bqkm horizon:
Reaction—moderately alkaline to very strongly alkaline
Other features—thin, discontinuous silica laminae in some pedons

2Bk horizon (where present):
Below the duripan in some pedons
Texture—stratified extremely gravelly sandy loam to sandy loam

Chiara Series

The Chiara series consists of shallow, well drained soils that formed in alluvium derived from mixed rock sources with a loess mantle high in content of volcanic ash. Chiara soils are on summits and side slopes of fan piedmont remnants. Slopes are 2 to 15 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy, mixed, mesic shallow Xerollic Durorthids

Typical pedon: Chiara very fine sandy loam, 2 to 8 percent slopes, in an area of the Bioya-Chiara-Cortez association:

A1—0 to 2 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 3/3) moist; moderate very thin platy and weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine roots; many very fine and fine tubular and common fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (3 to 6 inches thick)

A2—2 to 5 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; strong thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 10 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (0 to 3 inches thick)

Bw—5 to 11 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and few medium and coarse roots; few fine tubular pores; 10 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (4 to 7 inches thick)

Bqk—11 to 16 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine and very fine roots; few fine tubular pores; 20 percent weakly cemented durinodes; strongly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary. (5 to 10 inches thick)

2Bqkm—16 to 26 inches; white (10YR 8/2) indurated duripan with continuous, very thin silica laminae; massive; extremely hard, very firm; violently effervescent; strongly alkaline (pH 8.8).

Type location: Lander County, Nevada; about 20 miles north of Battle Mountain, approximately 450 feet west and 600 feet north of the southeast corner of sec. 33, T. 36 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 53 degrees F
Depth to duripan: 10 to 20 inches
Control section: Clay content—5 to 18 percent; texture—very fine sandy loam, loam, or silt loam, 70 to 85 percent silt plus very fine sand; rock

fragments—when mixed, up to 5 percent, mainly pebbles

Other features: Depth to lime—7 to 15 inches

A horizon:
Value—3 or 4 moist
Chroma—2 or 3
Structure—weak or moderate, very thin to thick platy, subangular blocky; massive in some pedons
Reaction—neutral to moderately alkaline

Bw horizon:
Value—6 or 7 dry, 3 to 5 moist
Chroma—3 or 4
Structure—weak to strong, fine to coarse subangular blocky; weak prismatic
Reaction—mildly alkaline to strongly alkaline

Bqk horizon:
Reaction—moderately alkaline or strongly alkaline
Cementation—contains from 20 to 60 percent weakly cemented and brittle durinodes 0.3 to 1 inch in diameter

Bqkm horizon:
Value—6 to 8 dry
Chroma—2 to 4
Structure—weak or moderate, thick platy; massive in some pedons
Other features—stratified gravelly and sandy substratum below a depth of 40 inches in some pedons

Clanalpine Series

The Clanalpine series consists of moderately deep, well drained soils that formed in residuum and colluvium derived from rhyolitic and andesitic tuff. Clanalpine soils are on side slopes of mountains. Slopes are 30 to 75 percent. Mean annual precipitation is about 15 inches, and mean annual temperature is about 41 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Typic Argixerolls

Typical pedon: Clanalpine extremely cobbly loam, 30 to 50 percent slopes, in an area of the Itca-Clanalpine-Torro association, in Lander County, south part. Pebbles cover 20 percent, cobbles 40 percent, and stones 5 percent of the surface:

A1—0 to 4 inches; grayish brown (10YR 5/2) extremely cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine vesicular pores; 25 percent pebbles, 35 percent cobbles; neutral (pH 7.2); abrupt smooth boundary. (1 to 5 inches thick)

A2—4 to 9 inches; grayish brown (10YR 5/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; 10 percent pebbles, 10 percent cobbles; neutral (pH 7.2); clear wavy boundary. (4 to 9 inches thick)

Bt1—9 to 12 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common fine tubular pores; common thin clay films on peds; 30 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary. (3 to 8 inches thick)

Bt2—12 to 22 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, friable, very sticky and plastic; few medium roots; many very fine tubular pores; common moderately thick clay films on peds; 30 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.4); gradual wavy boundary. (4 to 12 inches thick)

Bt3—22 to 27 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common very fine tubular pores; common thin clay films on peds; 30 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary. (0 to 24 inches thick)

BC—27 to 38 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and nonplastic; few fine roots; common very fine interstitial pores; 40 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.6); abrupt irregular boundary. (0 to 15 inches thick)

2Cr—38 to 49 inches; weathered and highly fractured rhyolitic tuff; pockets containing some soil and roots.

Type location: Lander County, Nevada, south part; about 33 miles southwest of Austin, approximately 1,200 feet south and 800 feet west of the northeast corner of sec. 15, T. 17 N., R. 38 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from mid-July through mid-October

Soil temperature: 43 to 45 degrees F
Mollic epipedon thickness: 8 to 14 inches, including the Bt1 horizon in some pedons
Solum thickness: 20 to 40 inches
Depth to the paralithic contact: 20 to 40 inches
Control section: Clay content—25 to 35 percent; rock fragments—35 to 60 percent, mainly pebbles and cobbles
Other features: BC horizon overlying the paralithic contact in some pedons

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—weak or moderate, fine or medium subangular blocky

Bt horizon:
Value—6 or 7 dry, 4 or 5 moist; 5 dry and 3 moist in the upper part of some pedons
Chroma—3 or 4
Texture—very cobbly clay loam, very cobbly loam, very gravelly clay loam, or very gravelly loam
Structure—subangular blocky or angular blocky
Reaction—neutral or mildly alkaline

Cleavage Series

The Cleavage series consists of shallow, well drained soils that formed in residuum or colluvium derived from rhyolite, welded tuff, chert, shale, quartzite, sandstone, or conglomerate and other igneous or sedimentary rocks. Cleavage soils are on crests and side slopes of mountains. Slopes are 4 to 75 percent. Mean annual precipitation is about 14 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Argixerolls

Typical pedon: Cleavage very gravelly fine sandy loam, 4 to 15 percent slopes, in an area of the Softscrabble-Walti-Cleavage association, in Lander County, south part. Pebbles cover 60 percent and cobbles 10 percent of the soil surface:

A—0 to 4 inch; grayish brown (10YR 5/2) very gravelly fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate very thin platy structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine vesicular pores; 30 percent pebbles, 10 percent cobbles; neutral (pH 7.2); abrupt smooth boundary. (1 to 9 inches thick)
BA—4 to 7 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 25 percent pebbles, 10 percent cobbles; neutral (pH 7.2); clear wavy boundary. (0 to 6 inches thick)
Bt—7 to 15 inches; brown (10YR 5/3) extremely gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium angular blocky structure; slightly hard, friable, sticky and plastic; few medium roots; common very fine tubular pores; common thin clay films on faces of peds; 50 percent pebbles, 20 percent cobbles; neutral (pH 7.2); clear smooth boundary. (7 to 12 inches thick)
2R—15 inches; rhyolite tuff.

Type location: Lander County, Nevada, south part; about 25 miles east of Austin, approximately 2,000 feet south and 2,800 feet east of the northwest corner of sec. 28, T. 17 N., R. 38 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from July through October for 70 to 120 consecutive days
Soil temperature: 44 to 47 degrees F
Mollic epipedon thickness: 7 to 10 inches, not including Bt horizon
Depth to bedrock: 14 to 20 inches
Control section: Clay content—20 to 35 percent
Rock fragments: 50 to 80 percent, mostly pebbles or cobbles
Reaction throughout the profile: Neutral or mildly alkaline

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—platy, granular, subangular blocky

BA horizon:
Chroma—2 to 4
Texture—very cobbly loam or very gravelly loam

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—very cobbly, extremely cobbly, very gravelly, or extremely gravelly clay loam; very gravelly sandy clay loam; very cobbly or very gravelly loam
Structure—subangular blocky or angular blocky; massive in some pedons

Colbar Series

The Colbar series consists of moderately deep, well

drained soils that formed in residuum and colluvium derived from rhyolitic and andesitic rocks. Colbar soils are on foothills. Slopes are 8 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Haplargids

Typical pedon: Colbar very cobbly loam, 30 to 50 percent slopes, strongly sloping, in an area of the Old Camp-Colbar-Rock outcrop association, steep. Pebbles cover 10 percent and cobbles 30 percent of the soil surface:

A—0 to 3 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; weak very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine vesicular and tubular pores; 15 percent pebbles, 20 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary. (2 to 6 inches thick)

BA—3 to 8 inches; yellowish brown (10YR 5/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium and coarse roots; common very fine and fine tubular pores; 10 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary. (0 to 5 inches thick)

Bt—8 to 22 inches; yellowish brown (10YR 5/4) cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine and few medium and coarse roots; common very fine and fine tubular pores; many thin clay films in pores and on peds; 5 percent pebbles, 10 percent cobbles, 5 percent stones; moderately alkaline (pH 8.2); abrupt wavy boundary. (3 to 14 inches thick)

Bk—22 to 26 inches; yellowish brown (10YR 5/4) cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine and few medium and coarse roots; common very fine and fine tubular pores; 5 percent pebbles, 10 percent cobbles, and 5 percent stones; few slightly effervescent thin lime coatings on the undersides of rock fragments; noneffervescent matrix; moderately alkaline (pH 8.4); abrupt wavy boundary. (0 to 16 inches thick)

2R—26 inches; fractured rhyolite ashflow tuff.

Type location: Lander County, Nevada; about 30 miles southwest of Battle Mountain, approximately 1,600 feet north and 1,700 feet east of the southwest corner of sec. 11, T. 26 N., R. 42 E.

Range in Characteristics

Soil moisture: Dry during summer and autumn, moist in late winter and spring

Soil temperature: 48 to 52 degrees F

Depth to bedrock: 20 to 40 inches

Thickness of A and Bt horizons: 11 to 24 inches

Control section: Clay content—25 to 35 percent; rock fragments—15 to 35 percent, mainly pebbles and cobbles

Other features: Bk horizon that has thin lime coatings on undersides of rock fragments below the Bt horizon in some pedons

A horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3
- Structure—weak to moderate, very fine to medium subangular blocky or very thin to medium platy
- Reaction—mildly alkaline or moderately alkaline

Bt horizon:
- Value—5 or 6 dry, 3, 4, or 5 moist
- Chroma—3 or 4
- Structure—weak to strong, very fine to medium subangular blocky
- Texture—cobbly loam, cobbly clay loam, or gravelly clay loam
- Reaction—mildly alkaline or moderately alkaline

C or Bk horizon (where present):
- Value—5, 6, or 7 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—gravelly loam or cobbly loam

Cortez Series

The Cortez series consists of moderately deep, well drained soils that are moderately deep to an indurated duripan. These soils formed in thin loess deposits over alluvium derived from mixed volcanic and sedimentary rock sources. Cortez soils are on fan piedmonts. Slopes are 8 to 15 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Nadurargids

Typical pedon: Cortez very fine sandy loam, 8 to 15 percent slopes, in an area of the Bioya-Chiara-Cortez association:

A1—0 to 3 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; moderate thin

and medium platy structure; slightly hard, friable, slightly sticky and nonplastic; few very fine roots; many very fine and fine vesicular pores; 5 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (1 to 6 inches thick)

A2—3 to 7 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; moderate very thin platy structure; soft, very friable, slightly sticky and nonplastic; many very fine and few fine roots; common very fine tubular pores; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 8 inches thick)

A3—7 to 12 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate very thin and thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; mildly alkaline (pH 7.8); abrupt smooth boundary. (0 to 8 inches thick)

2Bt—12 to 15 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to fine angular blocky; hard, firm, sticky and very plastic; common fine and very fine and few medium roots; common very fine tubular pores; few thin clay films on faces of peds and lining pores; 2 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (3 to 15 inches thick)

2Btnk1—15 to 24 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to fine angular blocky; hard, firm, sticky and very plastic; common very fine and fine and few medium roots; few very fine tubular pores; 10 percent pebbles; slightly effervescent; continuous moderately thick clay films on faces of peds and lining pores; strongly alkaline (pH 8.6); clear smooth boundary. (2 to 11 inches thick)

2Btnk2—24 to 26 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine roots; few very fine tubular pores; common thin clay films on faces of peds and lining pores; 15 percent pebbles; strongly effervescent; common fine lime filaments, threads, and soft masses; strongly alkaline (pH 8.6); abrupt wavy boundary. (0 to 4 inches thick)

2Bqkm—26 to 60 inches; white (10YR 8/1) indurated duripan with a continuous, 3-millimeter-thick, laminar cap; very pale brown (10YR 7/4) moist; massive; extremely hard, extremely firm; violently effervescent.

Type location: Lander County, Nevada; about 22 miles northeast of Battle Mountain, approximately 1,200 feet south and 1,000 feet west of the northeast corner of sec. 16, T. 34 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 50 degrees F
Depth to the indurated duripan: 22 to 36 inches
Control section: Clay content—40 to 50 percent when mixed; rock fragments—10 to 15 percent
Other features: An abrupt textural boundary between the A or BA and Bt horizons

A horizon:
- Value—5 to 7 dry, greater than 5.5 when mixed to a depth of 7 inches; 3 or 4 moist
- Chroma—2 or 3
- Structure—moderate or strong, very thin to thick platy; massive in some pedons
- Reaction—neutral to moderately alkaline

2Bt and 2Btnk horizons:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 3 to 5 moist
- Chroma—2 to 4
- Texture—clay, gravelly clay, or silty clay; thin subhorizons of clay loam in some pedons
- Structure—moderate or strong, medium or coarse prismatic or columnar; subangular blocky, angular blocky, or massive lower part of the 2Btnk horizon in some pedons
- Reaction—mildly alkaline to strongly alkaline
- Carbonates—common or many, fine or medium lime filaments and seams in lower part

Bqkm horizon:
- Value—6 to 8 dry, 4 to 7 moist
- Chroma—1 to 4
- Other features—8 to more than 30 inches thick

C horizon (where present):
- Texture—very gravelly coarse sandy loam, very cobbly loamy coarse sand
- Other features—moderately or strongly saline-sodic

Coztur Series

The Coztur series consists of shallow, well drained soils formed in residuum derived from volcanic and tuffaceous rocks. Coztur soils are on crests and side slopes of mountains and hills. Slopes are 2 to 15 percent. Mean annual precipitation is about 11 inches, and mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy, mixed, frigid Lithic Xerollic Haplargids

Typical pedon: Coztur loam, 2 to 8 percent slopes, in

an area of the Coztur-Genaw association. Pebbles cover 10 percent of the soil surface:

A1—0 to 3 inches; light brownish gray (10YR 6/2) loam, very dark grayish brown (10YR 3/2) moist; moderate thick platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common fine and medium vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 6 inches thick)

A2—3 to 7 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine and medium tubular pores; 5 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (0 to 4 inches thick)

BA—7 to 11 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine and medium tubular pores; 5 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 5 inches thick)

Bt—11 to 17 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common fine tubular pores; common thin clay films on peds and lining pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (4 to 7 inches thick)

R—17 inches; unweathered tuff.

Type location: Lander County, Nevada; about 38 miles southwest of Battle Mountain, approximately 1,270 feet south and 250 feet west of the northeast corner of sec. 16, T. 27 N., R. 41 E.

Range in Characteristics

Soil moisture: Dry in summer and fall, moist in winter and spring

Soil temperature: 43 to 46 degrees F

Depth to bedrock: 14 to 20 inches

Reaction throughout the profile: Neutral to mildly alkaline

A horizon:
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—2 or 3

BA horizon:
- Hue—2.5Y or 10YR
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 to 4

Bt horizon:
- Hue—2.5Y or 10YR
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 to 4
- Clay content—22 to 35 percent
- Texture—loam or clay loam
- Rock fragments—less than 15 percent, mainly pebbles

Creemon Series

The Creemon series consists of very deep, well drained soils that formed mainly in silty alluvium of mixed rock sources and in some volcanic ash and loess. Creemon soils are on fan skirts, inset fans, lagoons, and fan aprons. Slopes are 0 to 8 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Coarse-silty, mixed, mesic Duric Camborthids

Typical pedon: Creemon silt loam, 0 to 2 percent slopes:

A1—0 to 6 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; strong thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and few fine roots; many fine vesicular and very fine tubular pores; moderately alkaline (pH 8.0); clear wavy boundary. (3 to 7 inches thick)

A2—6 to 10 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and plastic; many very fine and few fine roots; many very fine tubular pores; moderately alkaline (pH 8.4); clear wavy boundary. (0 to 5 inches thick)

Bw—10 to 15 inches; very pale brown (10YR 7/3) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and few fine roots; common very fine tubular pores; strongly alkaline (pH 8.6); abrupt irregular boundary. (4 to 8 inches thick)

Bqk1—15 to 21 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine tubular pores; 25 percent 10- to 25-millimeter, weak durinodes; 50 percent discontinuous, hard, firm, brittle, weakly silica-cemented lenses 1 to 6 inches thick; strongly effervescent; common fine lime filaments; strongly alkaline (pH 8.6); clear wavy boundary. (4 to 12 inches thick)

Bqk2—21 to 28 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and slightly plastic; many very fine and few fine and medium roots; common very fine tubular pores; 35 percent 20- to 35-millimeter, weak and moderately strong durinodes; common fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); gradual smooth boundary. (5 to 16 inches thick)

Bqk3—28 to 45 inches; very pale brown (10YR 7/3) and yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) and brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine and few fine and medium roots; few very fine tubular pores; 25 percent 15- to 30-millimeter, weak and moderately strong durinodes; few fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (8 to 18 inches thick)

C—45 to 62 inches; light yellowish brown (10YR 6/4) gravelly very fine sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and slightly plastic; common very fine roots; common very fine interstitial and tubular pores; 15 percent 2- to 30-millimeter, flat and rounded pebbles; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; approximately 40 miles southwest of Battle Mountain, about 2,400 feet north and 1,250 feet east of the southwest corner of sec. 15, T. 26 N., R. 43 E.

Range in Characteristics

Soil moisture: Usually dry, moist in part for short periods from October through May

Soil temperature: 48 to 52 degrees F

Thickness of A and Bw horizons: 11 to 15 inches

Depth to Bqk horizon: 11 to 20 inches

Control section: Clay content—8 to 18 percent; texture—silt loam to very fine sandy loam

Reaction throughout the profile: Moderately alkaline or strongly alkaline

Other features: Lenses of volcanic ash in the lower part of the profiles in some pedons; as much as 20 percent pebbles below a depth of 40 inches and a continuous, weakly silica-cemented layer at a depth of 40 to 55 inches in some pedons; normally moderately or strongly salt and sodium affected below a depth of 20 to 30 inches but moderately or strongly affected throughout in some pedons; a Bq horizon between the Bw and Bqk horizons in some pedons

A horizon:
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—2 or 3
- Consistence—soft or slightly hard, nonsticky or slightly sticky, slightly plastic or plastic
- Other features—noneffervescent or slightly effervescent

Bw horizon:
- Value—6 or 7 dry
- Chroma—2 to 4
- Structure—thin platy; massive in some pedons
- Consistence—soft or slightly hard, nonsticky or slightly sticky, nonplastic or slightly plastic

Bqk horizons:
- Value—5 to 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Consistence—soft or slightly hard, nonsticky or slightly sticky
- Other features—strongly or violently effervescent; 20 to 40 percent durinodes; 3- to 10-inch-thick horizon that has 20 to 60 percent discontinuous weakly silica-cemented lenses at a depth of 11 to 29 inches in many pedons

Cren Series

The Cren series consists of very deep, well drained soils that formed in silty alluvium derived from mixed rock sources with an admixture of volcanic ash. Cren soils are on fan skirts and inset fans. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Coarse-silty, mixed (calcareous), mesic Durorthidic Torriorthents

Typical pedon: Cren silt loam:

A—0 to 7 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; moderate very thin and thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine, fine, and medium vesicular and very fine interstitial and tubular pores; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (4 to 8 inches thick)

Bk1—7 to 18 inches; light gray (2.5Y 7/2) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine interstitial and tubular pores; violently effervescent; common fine filaments of secondary carbonates; 2 percent small weak durinodes; strongly alkaline (pH 8.6); gradual smooth boundary. (6 to 12 inches thick)

Bk2—18 to 26 inches; light gray (10YR 7/2) silt loam,

brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 2 percent weak durinodes; violently effervescent; few fine filaments of secondary carbonates; strongly alkaline (pH 8.6); abrupt smooth boundary. (5 to 10 inches thick)

Bqk1—26 to 29 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine interstitial and tubular pores; 30 percent weak discontinuous silica-cemented lenses; 2 percent small durinodes; violently effervescent; common medium filaments of secondary carbonates; strongly alkaline (pH 8.8); abrupt smooth boundary. (3 to 10 inches thick)

Bqk2—29 to 49 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; few fine horizontal lenses of volcanic ash; 30 percent weak, 5- to 15-millimeter durinodes; violently effervescent; few fine filaments of secondary carbonates; strongly alkaline (pH 8.8); clear wavy boundary. (15 to 25 inches thick)

Bqk3—49 to 60 inches; pale brown (10YR 6/3) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and plastic; many very fine roots; many very fine tubular pores; 20 percent 10- to 30-millimeter, weak and moderately strong durinodes; violently effervescent; common fine filaments of secondary carbonates; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; approximately 62 miles southwest of Battle Mountain, about 2,700 feet west and 2,200 feet south of the northeast corner of sec. 34, T. 25 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry, moist in part for short periods from October through May

Soil temperature: 48 to 53 degrees F

Depth to Bqk horizon: 15 to 30 inches

Control section: Clay content—8 to 18 percent; texture—averages silt loam with less than 15 percent fine sand or coarser particles

Reaction throughout the profile: Moderately alkaline or strongly alkaline

Other features: Lenses of volcanic ash in the lower part of the profile in some pedons

A horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 or 3
Structure—platy or prismatic; massive in some pedons

Bk horizon:
Value—5 to 7 dry
Chroma—2 to 4
Texture—silt loam that has thin strata of very fine sandy loam or fine sandy loam in some pedons
Consistence—soft or slightly hard dry, nonsticky or slightly sticky wet

Bqk horizon:
Value—5 to 7 dry
Chroma—2 to 4
Texture—silt loam that has thin strata of very fine sandy loam or fine sandy loam in some pedons
Cementation—20 to 40 percent weak or moderately strongly cemented durinodes; 3- to 10-inch-thick horizon that is 20 to 50 percent discontinuous and weakly silica-cemented at a depth of 15 to 30 inches
Consistence—soft or slightly hard dry, nonsticky or slightly sticky wet

Davey Series

The Davey series consists of very deep, somewhat excessively drained soils that formed in alluvium derived from mixed rock sources. Davey soils are on sand sheets and fan skirts. Slopes are 0 to 4 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Sandy, mixed, mesic Xerollic Camborthids

Typical pedon: Davey fine sandy loam:

A—0 to 5 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate thin and medium platy; slightly hard, very friable, nonsticky and slightly plastic; common very fine random and few fine horizontal roots; many very fine vesicular, interstitial, and tubular pores; neutral (pH 6.8); clear wavy boundary. (4 to 8 inches thick)

Bw—5 to 13 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine random and common fine and medium oblique and horizontal roots; common very fine vesicular, interstitial, and tubular pores; mildly alkaline (pH

7.4); clear wavy boundary. (3 to 16 inches thick)
C—13 to 20 inches; light gray (10YR 7/2) loamy fine sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine random and very few fine and medium oblique roots; common very fine vesicular and interstitial and few very fine tubular pores; 3 percent rounded, 2- to 10-millimeter pebbles; slightly effervescent; strongly alkaline (pH 7.6); clear wavy boundary. (0 to 12 inches thick)
Ck1—20 to 29 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine random and very few fine and few medium oblique roots; common very fine vesicular and interstitial pores; 3 percent rounded, 2- to 10-millimeter pebbles; few fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (8 to 40 inches thick)
Ck2—29 to 41 inches; very pale brown (10YR 7/3) loamy fine sand, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine random and very few fine and medium oblique and vertical roots; common very fine vesicular and interstitial pores; 2 percent 5- to 10-millimeter, weak and very weak durinodes; 10 percent 2- to 30-millimeter, flat and rounded pebbles coated with lime on upper surfaces; common fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary. (0 to 20 inches thick)
Ck3—41 to 60 inches; very pale brown (10YR 7/3) loamy fine sand, yellowish brown (10YR 5/4) moist; few fine faint brownish yellow (10YR 6/6 moist) mottles; massive; soft, very friable, nonsticky and nonplastic; few very fine random and very few fine vertical roots; common very fine vesicular and interstitial pores; 10 percent 5- to 30-millimeter, weak and very weak durinodes; 5 percent rounded, 2- to 30-millimeter pebbles coated with lime on upper surfaces; slightly effervescent matrix; strongly alkaline (pH 8.8).

Type location: Lander County, Nevada; about 15 miles northwest of Battle Mountain, approximately 60 feet south and 2,900 feet west of the northeast corner of sec. 9, T. 34 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 53 degrees F
Thickness of A and Bw horizons: 11 to 23 inches
Depth to lime: 11 to 24 inches
Control section: Clay content—5 to 10 percent; rock fragments—up to 30 percent in any one horizon, averages less than 15 percent
Gypsum: Gypsum crystals below a depth of 20 inches in some pedons
Cementation: Continuous weak or strong silica-cemented horizons below a depth of 50 inches in some pedons
Other features: Unconformable very fine sandy loam or silt loam strata below a depth of 40 inches in some pedons

A horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, greater than 5.5 when the uppermost 7 inches is mixed; 3 to 6 moist
Chroma—1 to 3
Reaction—neutral or mildly alkaline

Bw horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4
Texture—loam, fine sandy loam, sandy loam; gravelly sandy loam subhorizons in some pedons
Structure—prismatic; massive in some pedons
Reaction—neutral to moderately alkaline

C and Ck horizons:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 to 6 moist
Chroma—2 to 4
Texture—fine sand, loamy fine sand, and loamy sand; thin strata of fine sandy loam or coarse sand in some pedons
Reaction—moderately alkaline or strongly alkaline
Carbonates—slightly effervescent to violently effervescent in the Ck horizon; few or common segregated lime filaments or partial coatings on rock fragments
Cementation—up to 10 percent weakly cemented durinodes below a depth of 20 inches
Mottles—relict mottles below a depth of 40 inches in some pedons

Desatoya Series

The Desatoya series consists of very deep, well drained soils that formed in alluvium derived from mixed sources. Desatoya soils are on fan piedmont remnants. Slopes are 8 to 50 percent. Mean annual precipitation is about 11 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Clayey over loamy-skeletal, montmorillonitic, mesic Durixerollic Haplargids

Typical pedon: Desatoya very gravelly loam, 8 to 15 percent slopes, in an area of the Desatoya-Pineval-Grassval association, in Lander County, south part. Pebbles cover 50 percent of the soil surface:

A—0 to 3 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, sticky and plastic; few very fine roots; many very fine vesicular pores; 35 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary. (2 to 5 inches thick)

Bt1—3 to 6 inches; brown (10YR 5/3) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and very plastic; common very fine and fine roots; many very fine interstitial pores; few thin clay films bridging sand grains and on faces of peds; 15 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (0 to 4 inches thick)

Bt2—6 to 10 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine interstitial and tubular pores; many thin and common moderately thick clay films on faces of peds; 30 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary. (4 to 12 inches thick)

Btk—10 to 14 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine and fine and few medium roots; few very fine tubular and interstitial pores; common thin clay films on faces of peds; 30 percent pebbles; common fine lime concretions; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 4 inches thick)

Bqk1—14 to 23 inches; very pale brown (10YR 7/3) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, firm, nonsticky and nonplastic; few fine and medium roots; few very fine tubular pores; 40 percent pebbles; 30 percent discontinuous strongly silica-cemented masses; many fine lime concretions; weak continuous silica cementation; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (9 to 40 inches thick)

Bqk2—23 to 38 inches; very pale brown (10YR 8/3) very gravelly sandy loam, very pale brown (10YR 7/4) moist; massive; hard, firm, nonsticky and nonplastic; common very fine and fine roots; many very fine interstitial pores; 55 percent pebbles; 20 percent discontinuous strongly silica-cemented lenses and 20 percent horizontal lenses of very gravelly loamy sand 1 or 2 inches thick; many fine lime concretions and seams; weak continuous silica cementation; violently effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 20 inches thick)

Bqk3—38 to 60 inches; very pale brown (10YR 8/3) very gravelly loamy sand, very pale brown (10YR 7/4) moist; single grained; loose, nonsticky and nonplastic; few very fine and fine roots; many very fine interstitial pores; 55 percent pebbles; 30 percent discontinuous strongly silica-cemented masses; many fine lime concretions and seams; violently effervescent; strongly alkaline (pH 9.0).

Type location: Lander County, Nevada, south part; about 28 miles west of Austin, approximately 2,000 feet east and 1,000 feet south of the northwest corner of sec. 10, T. 18 N., R. 39 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 48 to 52 degrees F
Depth to weak cementation: 14 to 20 inches
Depth to carbonates: 10 to 20 inches

A horizon:
- Value—5 or 6 dry, 3 to 5 moist
- Chroma—2 or 3
- Structure—weak or moderate subangular blocky or platy
- Reaction—neutral or mildly alkaline

Bt horizon:
- Value—5 or 6 dry, 3 to 5 moist
- Chroma—3 or 4
- Texture—gravelly clay loam or gravelly clay
- Clay content—35 to 45 percent
- Rock fragments—20 to 30 percent, mainly pebbles
- Structure—moderate or strong, fine or medium subangular blocky
- Reaction—mildly alkaline or moderately alkaline

Bqk horizon:
- Texture—extremely gravelly sandy loam to very gravelly loamy sand, averages very gravelly or extremely gravelly sandy loam
- Clay content—8 to 18 percent
- Rock fragments—40 to 80 percent, mainly pebbles
- Consistence—hard or very hard dry, firm to slightly brittle moist
- Reaction—moderately to very strongly alkaline

Cementation—continuous weakly silica cemented; discontinuously weak or strongly silica-cemented subhorizons below a depth of 38 inches

Dewar Series

The Dewar series consists of shallow, well drained soils that formed mainly in loess and silty alluvium derived from mixed rock sources and in some volcanic ash. Dewar soils are on fan piedmont remnants and mountain valley fan remnants. Slopes are 2 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Xerollic Durargids

Typical pedon: Dewar gravelly loam, 2 to 8 percent slopes, in Lander County, south part:

A1—0 to 2 inches; light brownish gray (10YR 6/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very thick platy structure; slightly sticky and slightly plastic; many very fine and few fine vesicular pores; 15 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary. (2 to 5 inches thick)

A2—2 to 4 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and common very fine roots; many very fine interstitial pores; 10 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary. (0 to 3 inches thick)

Bt—4 to 8 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common fine interstitial pores; common thin clay films on peds and bridging mineral grains; 15 percent pebbles; mildly alkaline (pH 7.6); gradual wavy boundary. (4 to 14 inches thick)

Btqk—8 to 14 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky and plastic; common fine and medium and few coarse roots; common fine interstitial pores; common thin clay films on peds; 15 percent 5- to 15-millimeter, moderately cemented durinodes; 15 percent pebbles, 5 percent cobbles and pan fragments; few fine soft lime masses; noneffervescent matrix; mildly alkaline (pH 7.8); abrupt wavy boundary. (0 to 8 inches thick)

Bqkm—14 to 50 inches; very pale brown (10YR 7/3) indurated duripan, yellowish brown (10YR 5/4) moist; strong medium and thick platy structure; extremely hard, extremely firm; few roots along horizontal fractures; continuous, 2- to 6-millimeter-thick, brown (10YR 5/3) silica laminae on upper surface and in horizontal bands throughout horizon, sometimes alternating with thin, strongly or weakly cemented strata; violently effervescent; moderately alkaline (pH 8.6).

Type location: Lander County, Nevada, south part; about 12 miles east of Austin, approximately 750 feet east and 2,200 feet north of the southwest corner of sec. 12, T. 19 N., R. 45 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Reaction throughout the profile: A and Bt horizons are neutral to moderately alkaline
Depth to indurated duripan: 13 to 20 inches

A horizon:
- Chroma—2 or 3
- Structure—moderate or strong, very thin to thick platy or fine or medium granular

Bt horizon:
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—2, 3, or 4 dry, 3 or 4 moist
- Texture—gravelly silty clay loam, gravelly clay loam, or cobbly silty clay loam
- Clay content—27 to 35 percent
- Rock fragments—15 to 30 percent, mainly pebbles and cobbles
- Structure—weak to strong, fine to coarse subangular blocky

Btqk horizon (where present):
- Clay content—15 to 27 percent
- Durinodes—weak or very weak, less than 30 percent
- Cementation—discontinuous or continuous weakly silica cemented in some pedons

Bqkm horizon:
- Structure—massive or thick or very thick platy
- Cementation—alternately strongly cemented or discontinuously indurated below the duripan in some pedons
- Other features—a 1- to 3-inch zone of degraded duripan material common along the upper boundary in some pedons

Ck horizon:
- Common below a depth of 40 inches in some pedons

Doowak Series

The Doowak series consists of very deep, excessively drained soils that formed in alluvium derived from mixed rock sources. Doowak soils are on inset fans. Slopes are 0 to 2 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Sandy-skeletal, mixed, mesic Xeric Torriorthents

Typical pedon: Doowak very gravelly loamy sand, 0 to 2 percent slopes, in an area of the Zineb-Doowak-Oxcorel association:

A—0 to 6 inches; grayish brown (10YR 5/2) very gravelly loamy sand, very dark grayish brown (10YR 3/2) moist; moderate medium and thick platy structure; soft, very friable, nonsticky and nonplastic; common fine and few very fine roots; many very fine vesicular pores; 40 percent pebbles; mildly alkaline (pH 7.6); abrupt smooth boundary. (4 to 6 inches thick)

Bw—6 to 18 inches; grayish brown (10YR 5/2) extremely gravelly sand, very dark grayish brown (10YR 3/2) moist; lithochromic colors; single grained; loose, nonsticky and nonplastic; common fine and few medium roots; many very fine interstitial pores; 65 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (10 to 25 inches thick)

Bk1—18 to 33 inches; grayish brown (10YR 5/2) extremely gravelly loamy sand, very dark grayish brown (10YR 3/2) moist; lithochromic colors; single grained; loose, nonsticky and nonplastic; common very fine and fine roots; many very fine interstitial pores; 70 percent pebbles; very thin lime coatings on undersides of pebbles; slightly effervescent; moderately alkaline (pH 8.0); gradual smooth boundary. (10 to 15 inches thick)

Bk2—33 to 48 inches; grayish brown (10YR 5/2) extremely gravelly loamy sand, very dark grayish brown (10YR 3/2) moist; lithochromic colors; single grained; loose, nonsticky and nonplastic; common very fine and fine and few medium roots; many very fine interstitial pores; 75 percent pebbles, 2 percent cobbles; very thin lime coatings on undersides of rock fragments; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (10 to 15 inches thick)

Bk3—48 to 60 inches; grayish brown (10YR 5/2) extremely gravelly sand, very dark grayish brown (10YR 3/2) moist; lithochromic colors; single grained; loose, nonsticky and nonplastic; many very fine interstitial pores; 60 percent pebbles, 5 percent cobbles; very thin lime coatings on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; approximately 18 miles south of Battle Mountain, about 1,000 feet north and 1,000 feet west of the southeast corner of sec. 9, T. 29 N., R. 44 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring

Soil temperature: 47 to 52 degrees F

Control section: Clay content—3 to 8 percent; rock fragments—60 to 80 percent, mainly pebbles; texture—extremely gravelly sand to extremely gravelly loamy sand

Reaction—mildly alkaline or moderately alkaline

A horizon:

Value—5 or 6 dry

Bk horizon:

Effervescence—slightly to strongly effervescent

Duffer Series

The Duffer series consists of very deep, poorly drained soils that formed in silty alluvium derived from mixed rock sources with an admixture of volcanic ash. Duffer soils are on flood plain remnants. Slopes are 0 to 2 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Fine-silty, carbonatic, mesic Aquic Calciorthids

Typical pedon: Duffer very fine sandy loam:

A1—0 to 2 inches; light brownish gray (2.5Y 6/2) very fine sandy loam, olive brown (2.5Y 4/4) moist; weak thick platy structure; hard, friable, nonsticky and nonplastic; very few very fine random roots; many very fine vesicular, interstitial, and tubular pores; up to ⅛-inch-thick salt crust on surface; slightly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 4 inches thick)

A2—2 to 4 inches; light gray (10YR 7/2) very fine sandy loam, brown (10YR 5/3) moist; weak thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine random roots; common very fine vesicular, interstitial, and tubular pores; weakly cemented by salts; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (0 to 2 inches thick)

Bw1—4 to 11 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 4/3) moist; common medium

distinct yellowish brown (10YR 5/4) mottles; weak very thin and thin platy structure; slightly hard, very friable, very sticky and very plastic; many very fine random and common fine and medium horizontal and oblique roots; many very fine interstitial and tubular pores; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (6 to 10 inches thick)

Bw2—11 to 18 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and plastic; few very fine random roots; many very fine tubular pores; violently effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (4 to 14 inches thick)

Bk1—18 to 29 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; common fine distinct yellowish brown (10YR 5/4) and few fine faint dark yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; massive; slightly hard, friable, sticky and plastic; common very fine random and very few fine oblique roots; many very fine tubular pores; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (6 to 11 inches thick)

Bk2—29 to 36 inches; light gray (10YR 7/1) silt loam, light brownish gray (10YR 6/2) moist; common fine distinct dark brown (7.5YR 4/4 moist) mottles; massive; slightly hard, friable, sticky and plastic; few very fine random roots; many very fine and fine tubular pores; about 25 percent 15- to 30-millimeter, irregularly shaped lime concretions; common medium lime filaments and threads; violently effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (7 to 31 inches thick)

Bk3—36 to 60 inches; light gray (10YR 7/1) silty clay loam, light brownish gray (10YR 6/2) moist; common fine distinct yellowish brown (10YR 5/4) and very dark grayish brown (10YR 3/2) and dark yellowish brown (10YR 4/4) mottles; weak very thin platy structure; hard, firm, sticky and plastic; very few very fine random roots; many very fine and fine tubular pores; 15 percent 15- to 30-millimeter, irregularly shaped silica and lime concretions; few medium lime filaments and threads; violently effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; about 7 miles south of Battle Mountain, approximately 1,300 feet north and 300 feet west of the southeast corner of sec. 20, T. 31 N., R. 45 E.

Range in Characteristics

Soil moisture: Saturated between depths of 20 to 40 inches in early spring, usually moist from capillary moisture from ground water, dry periods in summer and autumn

Soil temperature: 47 to 52 degrees F

Depth to the calcic horizon: 12 to 29 inches

Control section: Clay content—20 to 35 percent; texture—silt loam or silty clay loam

Reaction throughout the profile: Strongly or very strongly alkaline, moderately alkaline in some parts of some pedons

Other features: Generally strongly saline-sodic in the uppermost 20 to 30 inches unless reclaimed

A horizon:
- Hue—10YR to 5YR
- Value—5 to 7 dry, 3 to 5 moist
- Chroma—1 to 4

Bw horizon:
- Hue—10YR or 2.5Y
- Value—4 or 5 moist
- Chroma—2 to 4
- Structure—weak or moderate, very fine to medium granular or very thin to medium platy; massive in the lower part of some pedons

Bk horizon:
- Hue—10YR to 5Y
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—1 to 4
- Structure—subangular blocky; massive in some pedons
- Calcium carbonate equivalent—40 to 60 percent

2C horizon (where present):
- Hue—10YR to 5Y
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—1 to 4
- Texture—stratified very fine sandy loam to silty clay loam
- Clay content—15 to 30 percent

Dun Glen Series

The Dun Glen series consists of very deep, well drained soils that formed in mixed alluvium with a loess mantle high in content of volcanic ash. Dun Glen soils are on fan skirts and inset fans. Slopes are 0 to 4 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Typic Camborthids

Typical pedon: Dun Glen gravelly loam, 2 to 4 percent slopes, in an area of the Oxcorel-Whirlo-Dun Glen association. Pebbles cover 25 percent of the soil surface:

A—0 to 4 inches; pale brown (10YR 6/3) gravelly loam, dark grayish brown (10YR 4/2) moist; moderate thin and medium platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine vesicular and common fine interstitial pores; 15 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 5 inches thick)

Bw—4 to 11 inches; pale brown (10YR 6/3) very fine sandy loam, dark grayish brown (10YR 4/2) moist; moderate very fine and fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; many very fine tubular pores; 10 percent pebbles; moderately alkaline (pH 8.2); gradual smooth boundary. (6 to 10 inches thick)

Bk1—11 to 18 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 5 percent pebbles; violently effervescent; moderately alkaline (pH 8.2); gradual smooth boundary. (4 to 10 inches thick)

Bk2—18 to 26 inches; light yellowish brown (10YR 6/4) gravelly fine sandy loam, brown (10YR 4/3) moist; massive; hard, friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 20 percent pebbles; few fine lime filaments; violently effervescent; strongly alkaline (pH 8.8); gradual wavy boundary. (8 to 36 inches thick)

Bk3—26 to 32 inches; light yellowish brown (10YR 6/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 5 percent pebbles; few fine lime filaments; violently effervescent; strongly alkaline (pH 8.8); gradual wavy boundary. (0 to 15 inches thick)

Bk4—32 to 36 inches; light yellowish brown (10YR 6/4) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 5 percent pebbles; few fine lime filaments; violently effervescent; strongly alkaline (pH 8.8); gradual wavy boundary. (0 to 15 inches thick)

Bk5—36 to 44 inches; light yellowish brown (10YR 6/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 10 percent pebbles; few fine lime filaments; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary. (0 to 10 inches thick)

Bqk—44 to 60 inches; pale brown (10YR 6/3) fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 10 percent weak to strong discontinuous silica and lime cementation; 10 percent pebbles; violently effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; about 20 miles south of Battle Mountain, at a site approximately 1,320 feet east and 1,000 feet north of the southwest corner of sec. 27, T. 29 N., R. 44 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 53 degrees F
Control section: Texture—fine sandy loam, very fine sandy loam, or loam, 15 to 35 percent fine sand or coarser; clay content—9 to 14 percent; rock fragments—as much as 10 percent when mixed
Other features: Up to 15 percent hard and firm durinodes in some pedons

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Reaction—mildly alkaline or moderately alkaline

Bw horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Texture—very fine sandy loam or silt loam
- Rock fragments—as much as 10 percent, mainly pebbles
- Reaction—mildly alkaline or moderately alkaline

Bk horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Clay content—9 to 14 percent
- Rock fragments—5 to 30 percent
- Reaction—moderately alkaline to very strongly alkaline
- Other features—gravel below a depth of 40 inches in some pedons

Dunphy Series

The Dunphy series consists of very deep, somewhat poorly drained soils formed in alluvium of some volcanic ash but mainly of volcanic sources. Dunphy soils are on alluvial flats. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 50 degrees F.

Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Aeric Halaquepts

Typical pedon: Dunphy very fine sandy loam, 0 to 2

percent slopes, in an area of the Soolake-Dunphy-Argenta association:

A—0 to 6 inches; light gray (10YR 7/2) very fine sandy loam, brown (10YR 5/3) moist; moderate very thin platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; many fine vesicular pores; very strongly alkaline (pH 9.6); clear smooth boundary. (0 to 15 inches thick)

Cq1—6 to 18 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; few very fine and fine tubular pores; 20 percent hard, firm durinodes; strongly effervescent; very strongly alkaline (pH 9.6); abrupt wavy boundary. (5 to 20 inches thick)

Cq2—18 to 34 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; few very fine and fine tubular pores; 20 percent hard, firm durinodes; strongly effervescent; very strongly alkaline (pH 9.6); abrupt smooth boundary. (0 to 20 inches thick)

2Cq3—34 to 40 inches; very pale brown (10YR 8/3) fine sandy loam, pale brown (10YR 6/3) moist; few fine faint light yellowish brown (10YR 6/4) mottles; massive; hard, firm, nonsticky and nonplastic; continuous weakly silica cemented; common fine manganese stains; strongly effervescent; very strongly alkaline (pH 9.6); clear smooth boundary. (2 to 12 inches thick)

3Cq4—40 to 54 inches; very pale brown (10YR 8/3) very fine sandy loam, pale brown (10YR 6/3) moist; few fine faint light yellowish brown (10YR 6/4) mottles; massive; slightly hard, friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; 50 percent hard, firm durinodes; common thin magnesium stains; strongly effervescent; strongly alkaline (pH 9.6); clear smooth boundary. (0 to 16 inches thick)

4Cqkm—54 to 60 inches; very pale brown (10YR 8/3) strongly silica-cemented duripan; violently effervescent.

Type location: Lander County, Nevada; about 18 miles north of Battle Mountain and approximately 1,900 feet west and 1,600 feet north of the southeast corner of sec. 19, T. 35 N., R. 45 E.

Range in Characteristics

Soil moisture: Dry in midsummer and early fall, moist mid-October through mid-July; apparent seasonal water table between a depth of 2.5 to 3.5 feet from early spring through early summer; drained phases are recognized

Depth to Cq horizon: 6 to 17 inches

Control section: Clay content—10 to 15 percent when mixed; texture—gravelly sand to silty clay loam but dominantly very fine sandy loam, silt loam, or fine sandy loam

Profile colors:
- Hue—10YR to 5Y
- Value—6 to 8 dry, 4 to 6 moist

Profile reaction: Moderately alkaline to very strongly alkaline, becoming less alkaline with depth

Mottles: Iron mottles that have high chroma and yellowish hue and dark manganese mottles below a depth of 6 inches in most pedons

Other features: Thin strata of volcanic ash up to 4 inches thick in some pedons; strongly cemented duripans at a depth of 40 to 60 inches in some pedons

A horizon:
- Structure—weak or moderate, very fine or fine granular or very thin to medium platy; massive in some pedons
- Consistence—soft to very hard dry: very hard only in areas that are strongly sodium affected; never hard or very hard where massive
- Effervescence—noneffervescent to violent

C and Cq horizons:
- Consistence—weakly silica-cemented horizons hard to extremely hard dry; noncemented horizons friable or very friable moist
- Effervescence—effervescent throughout except for thin strata of volcanic ash in some pedons
- Cementation—continuous weakly silica-cemented horizons interstratified with horizons that lack silica accumulation or contains durinodes in a friable or very friable matrix

Enko Series

The Enko series consists of very deep, well drained soils that formed mainly from mixed rock sources and in loamy alluvium, weathered loess, and volcanic ash. Enko soils are on inset fans, fan aprons, and fan skirts. Slopes are 2 to 8 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Durixerollic Camborthids

Typical pedon: Enko very fine sandy loam, 2 to 8

percent slopes, in an area of the Cherry Spring-Enko association:

A1—0 to 2 inches; light brownish gray (2.5Y 6/2) very fine sandy loam, brown (10YR 4/3) moist; moderate thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular and interstitial pores; neutral (pH 7.2); clear smooth boundary. (2 to 7 inches thick)

A2—2 to 7 inches; very pale brown (10YR 7/3) loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular and interstitial pores; mildly alkaline (pH 7.6); clear wavy boundary. (0 to 5 inches thick)

Bw—7 to 15 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine tubular pores; moderately alkaline (pH 8.0); clear smooth boundary. (6 to 20 inches thick)

Bqk1—15 to 23 inches; very pale brown (10YR 7/3) sandy loam, brown (10YR 4/3) moist; massive; hard, firm, slightly sticky and slightly plastic; 5 percent 2- to 5-millimeter, strongly cemented durinodes; common very fine and few fine roots; common very fine tubular pores; common medium lime filaments and threads; 1 percent pebbles; weak continuous silica cementation; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (5 to 12 inches thick)

Bqk2—23 to 60 inches; very pale brown (10YR 7/3) sandy loam, brown (10YR 4/3) moist; massive; hard, firm, slightly sticky and slightly plastic; 5 percent 2- to 5-millimeter, strongly cemented durinodes; few very fine roots; few very fine tubular pores; common medium lime filaments and threads; 1 percent pebbles; weak continuous silica cementation; strongly effervescent; strongly alkaline (pH 8.8).

Type location: Lander County, Nevada; about 26 miles north of Battle Mountain at a site approximately 2,250 feet north and 2,000 feet east of the southwest corner of sec. 3, T. 35 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 49 to 52 degrees F
Thickness of A and Bw horizons: 12 to 30 inches
Depth to weak continuous cementation: 14 to 30 inches
Control section: Clay content—10 to 18 percent; rock fragments—0 to 15 percent pebbles
Other features: Sandy substrata or substrata containing gypsum crystals below a depth of 40 inches in some pedons; noneffervescent Bq horizon above the Bqk horizon in some pedons

A horizon:
- Hue—10YR or 2.5Y
- Value—commonly 6 or 7 dry, 5 dry in some subhorizons of some pedons, 3 or 4 moist
- Chroma—2 or 3
- Structure—very fine and fine granular; very thin to medium platy; or massive
- Consistence—slightly sticky or sticky, slightly plastic or plastic
- Reaction—neutral to moderately alkaline

Bw horizon:
- Value—5 or 7 dry, 3 to 5 moist
- Chroma—2, 3, or 4
- Texture—mainly loam, fine sandy loam, or sandy loam; strata of silt loam or clay loam in the upper part in some pedons
- Structure—prismatic, angular blocky, subangular blocky; massive in some pedons
- Consistence—nonsticky, slightly sticky, or sticky, nonplastic, slightly plastic, or plastic
- Reaction—neutral to moderately alkaline, becoming more alkaline with depth
- Carbonates—some pedons are calcareous in the lower part of the horizon

Bqk horizon:
- Hue—10YR, 2.5Y, 5Y
- Value—4 to 7 moist
- Chroma—1 to 4 dry, 2 to 4 moist
- Texture—loam, sandy loam, fine sandy loam
- Silica cementation—continuous weakly silica-cemented horizons 10 to 40 inches thick; subhorizons not continuously weakly silica cemented 20 to 50 percent durinodes or subhorizons 20 to 75 percent discontinuously weakly silica cemented
- Reaction—mildly alkaline to strongly alkaline, becoming more alkaline with depth
- Other features—relict iron mottles or mica particles in many pedons; very gravelly or extremely gravelly substratum phases below a depth of 40 inches in some pedons

Filiran Series

The Filiran series consists of moderately deep, well drained soils formed in alluvium of some loess but mainly of volcanic and metamorphic rocks. Filiran soils are on fan piedmonts. Slopes are 2 to 8 percent. Mean

annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Haploxerollic Nadurargids

Typical pedon: Filiran silt loam, 2 to 4 percent slopes, in an area of the Filiran-Pineval-Kingingham association, in Lander County, south part. Pebbles cover 10 percent of the soil surface:

A1—0 to 3 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.6); abrupt smooth boundary. (2 to 4 inches thick)

A2—3 to 7 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and medium roots; common very fine and medium tubular pores; 5 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.8); abrupt smooth boundary. (3 to 6 inches thick)

E—7 to 9 inches; light brownish gray (10YR 6/2) gravelly silt loam, dark brown (10YR 4/3) moist; weak thick platy structure; hard, friable, slightly sticky and slightly plastic; common very fine and medium roots; common very fine and fine tubular pores; 15 percent pebbles, 5 percent cobbles; 20 percent white (10YR 8/2) bleached faces of peds; moderately alkaline (pH 8.0); abrupt wavy boundary. (1 to 2 inches thick)

E/B—9 to 12 inches; pale brown (10YR 6/3) gravelly silt loam, dark brown (10YR 3/3) moist; strong fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine and few medium roots; common very fine and fine tubular pores; common thick clay films on faces of peds; 15 percent pebbles, 5 percent cobbles; 60 percent white (10YR 8/2) bleached faces of peds; moderately alkaline (pH 8.4); abrupt wavy boundary. (0 to 4 inches thick)

2Btn—12 to 20 inches; light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many thick clay films on faces of peds and in pores; 5 percent pebbles; slightly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary. (7 to 13 inches thick)

2Btnk—20 to 28 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many thick clay films on faces of peds and in pores; 20 percent pebbles; common lime coatings on undersides of rock fragments; common medium threads and filaments of secondary carbonates; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (4 to 8 inches thick)

2Btnqky—28 to 33 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; common thick clay films on faces of peds and in pores; 20 percent weak discontinuous silica cementation; 25 percent pebbles, 5 percent cobbles; many medium filaments of secondary carbonates; common medium soft masses of gypsum; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (3 to 7 inches thick)

2Bqkm—33 to 60 inches; pale brown (10YR 6/3) strongly cemented duripan, dark brown (10YR 4/3) moist; massive; very hard, very firm; disseminated lime; violently effervescent; strongly alkaline (pH 8.8).

Type location: Lander County, Nevada, south part; approximately 25 miles north of Austin, about 2,000 feet north and 150 feet west of the southeast corner of sec. 16, T. 23 N., R. 44 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from mid-June through October

Soil temperature: 47 to 52 degrees F

Depth to duripan: 20 to 40 inches

Depth to carbonates: 12 to 25 inches

Control section: Clay content—35 to 50 percent; rock fragments—5 to 20 percent when mixed, mainly pebbles

A horizon:
- Value—3 or 4 moist
- Chroma—2 or 3

E horizon:
- Value—3 or 4 moist
- Chroma—2 or 3
- Structure—platy, subangular blocky, or prismatic
- Other features—15 to 60 percent of faces of peds are bleached

Btn horizon:
- Hue—10YR or 2.5Y

Value—4, 5, or 6 dry, 3, 4, or 5 moist
Chroma—3 or 4
Texture—clay, gravelly clay, silty clay, clay loam, or silty clay loam
Exchangeable sodium—15 to 35 percent
Carbonates—none to slightly effervescent in the upper part; strongly effervescent to violently effervescent in the lower part
Reaction—strongly alkaline or very strongly alkaline

Floer Series

The Floer series consists of deep, well drained soils that formed in residuum and colluvium of some loess but mainly of basalt, chert, and other rocks. Floer soils are on side slopes of mountains and foothills. Slopes are 8 to 15 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 43 F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Aridic Palexerolls

Typical pedon: Floer gravelly silt loam, 8 to 15 percent slopes, in an area of the Floer-Slaven-Roca association. Pebbles cover 30 percent and cobbles and stones 5 percent of the soil surface:

A1—0 to 3 inches; grayish brown (10YR 5/2) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; weak very thin and thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common medium roots; common very fine tubular pores; 15 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.0); abrupt wavy boundary. (2 to 3 inches thick)

A2—3 to 12 inches; grayish brown (10YR 5/2) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and medium roots; common very fine tubular and interstitial pores; 15 percent pebbles, 2 percent cobbles; moderately alkaline (pH 8.0); abrupt wavy boundary. (3 to 9 inches thick)

Bt1—12 to 15 inches; brown (10YR 4/3) very cobbly silty clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, very sticky and very plastic; common very fine roots; common very fine tubular pores; common thin clay films on faces of peds; about 20 percent pebbles, 25 percent cobbles, and 5 percent stones; moderately alkaline (pH 8.0); abrupt wavy boundary. (1 to 3 inches thick)

Bt2—15 to 21 inches; dark yellowish brown (10YR 4/4) very cobbly clay, dark brown (10YR 3/3) moist; strong medium and coarse prismatic structure parting to strong medium subangular blocky; very hard, very firm, very sticky and very plastic; few very fine roots; common very fine tubular pores; continuous moderately thick clay films on faces of peds and lining pores; 25 percent pebbles, 25 percent cobbles, and 5 percent stones; moderately alkaline (pH 8.0); abrupt wavy boundary. (3 to 6 inches thick)

Btk1—21 to 26 inches; dark yellowish brown (10YR 4/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; strong fine and medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine roots; few very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 20 percent pebbles, 25 percent cobbles; strongly effervescent; common fine soft lime filaments; moderately alkaline (pH 8.4); clear wavy boundary. (5 to 10 inches thick)

Btk2—26 to 50 inches; yellowish brown (10YR 5/6) very cobbly clay, yellowish brown (10YR 5/6) moist; moderate medium subangular blocky structure; hard, friable, very sticky and very plastic; few very fine roots; common very fine tubular pores; common thin clay films on faces of peds and lining pores; 20 percent pebbles, 30 percent cobbles, and 5 percent stones; strongly effervescent; common fine soft lime filaments; moderately alkaline (pH 8.4); abrupt wavy boundary. (4 to 25 inches thick)

R—50 inches; fractured chert.

Type location: Lander County, Nevada; in the Hilltop Canyon area, approximately 1,320 feet north and 600 feet east of the southwest corner of sec. 5, T. 29 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, but moist in part from November through July
Soil temperature: 42 to 47 degrees F
Mollic epipedon thickness: 10 to 20 inches, includes the upper part of the Bt horizon
Depth to bedrock: 40 to 60 inches
Depth to carbonates: 20 to 40 inches, slight or strong effervescence
Control section: Clay content—50 to 65 percent
Profile reaction: Neutral to moderately alkaline, becoming more alkaline with depth
Secondary carbonates: Common fine segregated lime filaments, slightly to strongly effervescent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Structure—weak to strong, very thin to thick platy or very fine to coarse subangular blocky

Bt horizon:
Value—2 or 3 moist
Chroma—2 or 3 in the upper part and 3 or 4 in the lower part
Texture—very gravelly, very stony, or very cobbly silty clay loam in the thin upper subhorizon; very cobbly clay or very stony clay in lower subhorizons
Rock fragments—20 to 30 percent pebbles and 20 to 40 percent cobbles and stones

Btk horizon:
Hue—7.5YR or 10YR
Value—4, 5, or 6 dry, 3, 4, or 5 moist
Chroma—4 to 8
Texture—extremely stony clay loam, extremely stony clay, or very cobbly clay, when mixed
Rock fragments—20 to 30 percent pebbles and 20 to 40 percent cobbles and stones

Genaw Series

The Genaw series consists of shallow, well drained soils that formed in loess mantled residuum derived from tuffaceous sediments. Genaw soils are on rolling hills and rock pediments. Slopes are 4 to 30 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Xerollic Haplargids

Typical pedon: Genaw very fine sandy loam, 4 to 15 percent slopes, in an area of the Genaw-Perlor-Puett association. Pebbles cover 5 percent and cobbles 5 percent of the soil surface:

A1—0 to 3 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; weak medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine and fine roots; many very fine and fine vesicular pores; moderately alkaline (pH 8.0); abrupt smooth boundary. (2 to 7 inches thick)

A2—3 to 6 inches; brown (10YR 5/3) gravelly very fine sandy loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; common fine and medium tubular and interstitial pores; 15 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (0 to 4 inches thick)

Bt—6 to 11 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium roots; few very fine tubular pores; common fine and medium clay films on faces of peds and lining pores; 20 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (4 to 7 inches thick)

Bkq—11 to 16 inches; very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; common fine and medium roots; few very fine tubular pores; 35 percent pebbles; common fine and medium lime filaments; 10 percent weak durinodes; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (2 to 5 inches thick)

Cr—16 inches; soft tuffaceous sediments.

Type location: Lander County, Nevada; about 26 miles southwest of Battle Mountain, about 800 feet north and 2,400 feet west of the southeast corner of sec. 6, T. 27 N., R. 42 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to paralithic contact: 14 to 20 inches

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—loam or clay loam
Rock fragments—15 to 35 percent, mainly pebbles
Clay content—18 to 30 percent

Bkq horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4
Texture—sandy loam or loam
Rock fragments—25 to 50 percent, mainly pebbles
Cementation—5 to 15 percent weak discontinuous cementation or weakly cemented durinodes
Reaction—Moderately alkaline or strongly alkaline

Ginex Series

The Ginex series consists of shallow, well drained soils that formed in residuum derived from sedimentary rock. Ginex soils are on side slopes of hills. Slopes are 30 to 50 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic, shallow Xerollic Haplargids

Typical pedon: Ginex very gravelly sandy loam, 30 to 50 percent slopes, in an area of the Ginex-Burrita-Burrita, south aspect, association. Pebbles cover 50 percent and cobbles 5 percent of the soil surface:

A—0 to 2 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 30 percent pebbles, 5 percent cobbles; slightly effervescent; mildly alkaline (pH 7.8); abrupt smooth boundary. (2 to 4 inches thick)

Btk1—2 to 4 inches; light yellowish brown (10YR 6/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine granular structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; common very fine interstitial pores; common thin clay films bridging sand grains; 30 percent pebbles; common thin lime coatings on undersides of rock fragments; strongly effervescent; mildly alkaline (pH 7.8); clear wavy boundary. (0 to 3 inches thick)

Btk2—4 to 7 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak medium angular blocky structure; slightly hard, very friable, sticky and plastic; common fine and medium roots; common very fine interstitial pores; common thin clay films bridging sand grains; 45 percent pebbles; common thin lime coatings on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary. (3 to 8 inches thick)

Cr—7 inches; highly fractured, moderately weathered shale.

Type location: Lander County, Nevada; approximately 28 miles south of Battle Mountain, about 2,500 feet east and 2,100 feet north of the projected southwest corner of sec. 1, T. 25 N., R. 43 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to paralithic contact: 5 to 14 inches
Control section: Clay content—18 to 30 percent; rock fragments—35 to 50 percent when mixed, mainly pebbles
Reaction throughout the profile: Mildly alkaline or moderately alkaline, becoming more alkaline with depth

A horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—5 or 6 dry, 3 or 4 moist
Effervescence—noneffervescent or slightly effervescent

Btk horizon:
Hue—5YR, 7.5YR, 10YR, or 2.5Y
Value—5 to 7 dry, 3 to 5 moist
Chroma—3 to 6
Texture—averages very gravelly loam or very gravelly sandy clay loam
Effervescence—slightly effervescent or strongly effervescent
Carbonates—thin coatings on undersides of pebbles or fine filaments and threads

Glean Series

The Glean series consists of deep, well drained soils that formed in colluvium and residuum derived from mixed rocks including metamorphic rocks, basalt, and andesite. Glean soils are on side slopes of mountains. Slopes are 30 to 75 percent. Mean annual precipitation is about 14 inches, and mean annual temperature is about 45 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Pachic Haploxerolls

Typical pedon: Glean gravelly loam, 30 to 50 percent slopes, in an area of the Glean-Walti-Cleavage association. Pebbles cover 20 percent and stones less than 1 percent of the soil surface:

A1—0 to 6 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate medium platy structure parting to moderate medium subangular blocky; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 30 percent pebbles; neutral (pH 7.0); abrupt smooth boundary. (1 to 14 inches thick)

A2—6 to 19 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine tubular pores; 35 percent pebbles; neutral (pH 7.0); clear wavy boundary. (0 to 14 inches thick)

AC—19 to 31 inches; dark brown (10YR 4/3) very gravelly loam, very dark brown (10YR 2/2) moist; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine tubular pores; 35 percent pebbles, 10 percent

cobbles; neutral (pH 7.2); clear wavy boundary. (10 to 15 inches thick)

C—31 to 49 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; few very fine tubular pores; 35 percent pebbles, 10 percent cobbles; neutral (pH 7.2); abrupt smooth boundary. (6 to 23 inches thick)

2R—49 inches; altered andesite.

Type location: Lander County, Nevada; approximately 24 miles south of Battle Mountain, about 1,550 feet south and 500 feet east of the northwest corner of sec. 29, T. 28 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist from November through mid-July

Soil temperature: 43 to 47 degrees F

Mollic epipedon thickness: 22 to 39 inches

Depth to bedrock: 40 to 60 inches

Control section: Texture—very gravelly sandy loam or very cobbly loam; rock fragments—40 to 70 percent, mainly pebbles and cobbles

Reaction throughout the profile: Slightly acid or neutral

A horizon:

Value—4 or 5 dry
Chroma—2 or 3

C horizon:

Hue—7.5YR, 10YR, or 2.5Y
Value—5 or 6 dry, 4 or 5 moist
Chroma—2 to 4

Golconda Series

The Golconda series consists of moderately deep, well drained soils that formed in mixed alluvium with a mantle of loess high in content of volcanic ash. Golconda soils are on fan piedmonts. Slopes are 2 to 8 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Haplic Nadurargids

Typical pedon: Golconda very fine sandy loam, 2 to 8 percent slopes, in an area of the Golconda-Blownout land complex:

A1—0 to 4 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; strong thick and very thick platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and common fine vesicular pores; 10 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (3 to 7 inches thick)

A2—4 to 8 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; strong medium and thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine vesicular and few very fine tubular pores; 10 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 8 inches thick)

Btnk1—8 to 13 inches; brown (10YR 5/3) clay loam, dark yellowish brown (10YR 4/4) moist; strong fine and medium prismatic structure; hard, firm, sticky and plastic; many very fine and few fine roots; common very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 5 percent pebbles; many fine soft lime patches on faces of peds; strongly effervescent; strongly alkaline (pH 8.8); gradual smooth boundary. (3 to 5 inches thick)

Btnk2—13 to 20 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; strong fine and medium prismatic structure; hard, firm, sticky and plastic; many very fine and few fine roots; many very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 5 percent pebbles; thin lime coatings on undersides of pebbles; many fine, soft lime patches on faces of peds; violently effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (5 to 15 inches thick)

Btnk3—20 to 27 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/6) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; many very fine roots; few very fine tubular pores; common thin clay films on faces of peds and lining pores; 30 percent pebbles; thin lime coatings on undersides of pebbles; many fine soft lime patches on faces of peds; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (0 to 8 inches thick)

Bqkm—27 to 43 inches; pale brown (10YR 6/3) strongly silica-cemented duripan, dark yellowish brown (10YR 4/4) moist; massive; extremely hard, extremely firm; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (10 to 20 inches thick)

Cqk—43 to 60 inches; pale brown (10YR 6/3) extremely gravelly loamy coarse sand, dark yellowish brown (10YR 4/4) moist; massive; very hard, firm, nonsticky and nonplastic; many very fine interstitial pores; 75 percent pebbles; weak continuous cementation with discontinuous strata of strong cementation 2 or 3 inches thick; violently effervescent; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; about 12 miles southwest of Battle Mountain, approximately 2,500 feet north and 1,000 feet west of the southeast corner of sec. 6, T. 30 N., R. 43 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from May through October
Soil temperature: 47 to 52 degrees F
Depth to duripan: 20 to 40 inches
Depth to segregated lime: 8 to 15 inches
Other features: BA or BC horizon, or both, in some pedons

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Reaction—mildly alkaline or moderately alkaline

Btnk horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 6
Texture—gravelly clay loam, clay loam, or silty clay loam
Clay content—27 to 35 percent
Rock fragments—5 to 35 percent, mainly pebbles
Structure—prismatic, subangular blocky in the lower subhorizons of some pedons
Reaction—moderately alkaline to very strongly alkaline
Other features—20 to 50 percent exchangeable sodium; noneffervescent in the upper part in some pedons

Bqk horizon (above the duripan in some pedons):
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 to 6

Bqkm horizon:
Value—6, 7, or 8 dry, 5 or 6 moist
Chroma—3 or 4
Rock fragments—5 to 45 percent, mainly pebbles
Structure—platy; massive in some pedons
Consistence—very hard or extremely hard dry
Other features—discontinuous lenses of indurated material in some pedons

Bqk horizon:
Texture—stratified extremely gravelly loamy coarse sand to very gravelly sandy loam
Other features—loose to weakly cemented pebbles in most pedons

Goldrun Series

The Goldrun series consists of very deep, somewhat excessively drained soils that formed in eolian sands derived from mixed rock sources with some influence from volcanic ash. Goldrun soils are on sand dunes and sand sheets. Slopes are 0 to 30 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Mixed, mesic Xeric Torripsamments

Typical pedon: Goldrun fine sand, 0 to 4 percent slopes, in an area of the Davey-Goldrun complex:

A—0 to 7 inches; pale brown (10YR 6/3) fine sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine random and very few fine oblique roots; many very fine vesicular and interstitial pores; neutral (pH 7.2); clear smooth boundary. (5 to 9 inches thick)

C1—7 to 12 inches; pale brown (10YR 6/3) fine sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine random and very few fine oblique roots; many very fine interstitial pores; neutral (pH 7.2); clear wavy boundary. (5 to 20 inches thick)

C2—12 to 18 inches; pale brown (10YR 6/3) fine sand, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine random and very few fine oblique roots; many very fine interstitial and few very fine tubular pores; thin silica coatings bridging sand grains; neutral (pH 7.2); clear wavy boundary. (6 to 20 inches thick)

C3—18 to 30 inches; pale brown (10YR 6/3) fine sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine random roots; common very fine interstitial and tubular pores; about 2 percent 2- to 25-millimeter, rounded pebbles; neutral (pH 7.2); gradual smooth boundary. (0 to 28 inches thick)

C4—30 to 35 inches; light gray (10YR 7/2) loamy fine sand, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine random roots; common very fine interstitial pores; neutral (pH 7.4); clear smooth boundary. (0 to 15 inches thick)

2Ck—35 to 60 inches; very pale brown (10YR 7/3) fine sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; very few very fine random roots; common very fine interstitial pores; about 2 percent 2- to 25-millimeter, rounded pebbles; few fine lime filaments; strongly effervescent; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; about 16.5 miles north of Battle Mountain, approximately 1,000 feet north and 100 feet east of the southwest corner of sec. 33, T. 35 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees
Depth to lime: 17 to 35 inches
Control section: Texture—dominantly fine sand that has strata of coarse sand, loamy sand, or loamy fine sand in some pedons; clay content—1 to 8 percent
Other features: Some pedons have horizons that have less than 15 percent durinodes or weak discontinuous silica bridging mineral grains

A horizon:
Reaction—neutral to moderately alkaline

C horizon:
Reaction—neutral to moderately alkaline

2Ck horizon:
Reaction—moderately alkaline or strongly alkaline
Other features—slightly or strongly effervescent

Graley Series

The Graley series consists of shallow, well drained soils that formed in residuum and colluvium derived from mixed rock sources. Graley soils are on side slopes of mountains. Slopes are 30 to 50 percent. Mean annual precipitation is about 11 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls

Typical pedon: Graley very gravelly sandy loam, 30 to 50 percent slopes, in an area of the Graley-Loncan-Bregar association. Pebbles cover 30 percent and cobbles 5 percent of the surface:

A1—0 to 1 inch; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial pores; 40 percent pebbles; neutral (pH 7.0); abrupt wavy boundary. (1 to 7 inches thick)

A2—1 to 7 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many very fine roots; many very fine interstitial pores; 30 percent pebbles; mildly alkaline (pH 7.4); clear wavy boundary. (2 to 8 inches thick)

Bt—7 to 14 inches; pale brown (10YR 6/3) very gravelly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; many very fine roots; many fine and medium interstitial and common very fine tubular pores; 40 percent pebbles, 15 percent cobbles; common moderately thick clay films on faces of peds, lining pores, and on rock fragments; mildly alkaline (pH 7.6); abrupt wavy boundary. (3 to 10 inches thick)

2R—14 inches; fractured chert.

Type location: Lander County, Nevada; approximately 30 miles southeast of Battle Mountain, about 1,500 feet east and 2,100 feet south of the northwest corner of sec. 14, T. 30 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually moist, dry from mid-July through late October
Soil temperature: 42 to 47 degrees F
Mollic epipedon thickness: 7 to 12 inches, does not include the argillic horizon
Depth to bedrock: 14 to 20 inches
Control section: Clay content—35 to 50 percent; rock fragments—35 to 60 percent, mainly pebbles; texture—very gravelly clay loam or very gravelly clay
Reaction throughout the profile: Neutral or mildly alkaline

A horizon:
Value—4 or 5 dry
Chroma—2 or 3

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Structure—angular or subangular blocky
Consistence—very hard or hard dry

Graley Variant

The Graley Variant consists of shallow, well drained soils that formed in residuum and colluvium derived from chert. Graley Variant soils are on side slopes of mountains. Slopes are 15 to 50 percent. Mean annual precipitation is about 11 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls

Typical pedon: Graley Variant very gravelly loam, 15 to 50 percent slopes, in an area of the Slaven-Wiskan-Graley Variant association:

A1—0 to 2 inch; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular and few very fine vesicular pores;

35 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 7 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 35 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary. (5 to 8 inches thick)

Bt1—7 to 9 inches; yellowish brown (10YR 5/4) very gravelly clay loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and few fine roots; few very fine tubular pores; few thin clay films on faces of peds and lining pores; 30 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 4 inches thick)

Bt2—9 to 15 inches; yellowish brown (10YR 5/4) very gravelly clay, brown (10YR 4/3) moist; strong fine subangular blocky structure; hard, firm, sticky and very plastic; few very fine roots; few very fine tubular pores; common thin clay films on faces of peds and lining pores; 40 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.6); abrupt wavy boundary. (5 to 12 inches thick)

2R—15 inches; fractured chert.

Type location: Lander County, Nevada; approximately 18 miles southeast of Battle Mountain, about 1,000 feet north and 500 feet east of the southwest corner of sec. 21, T. 29 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 44 to 47 degrees F
Mollic epipedon thickness: 7 to 12 inches, does not include the argillic horizon
Depth to bedrock: 14 to 20 inches
Control section: Clay content—35 to 50 percent; rock fragments—40 to 60 percent, mainly pebbles and cobbles; texture—very gravelly clay loam or very gravelly clay

A horizon:
Value—4 or 5 dry
Chroma—2 or 3

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist

Grassval Series

The Grassval series consists of shallow, well drained soils that formed in alluvium derived from mixed rock sources. Grassval soils are on fan piedmont remnants. Slopes are 2 to 15 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Xerollic Durargids

Typical pedon: Grassval fine sandy loam, 8 to 15 percent slopes, in an area of the Grassval-Oxcorel association, in Lander County, south part. Gravel covers 10 percent of the soil surface:

A—0 to 4 inches; light brownish gray (10YR 6/2) fine sandy loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; few fine and very fine roots; few medium and many fine vesicular pores; 10 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary. (2 to 5 inches thick)

Bt—4 to 10 inches; pale brown (10YR 6/3) gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few medium and coarse and common fine roots; common fine and very fine tubular pores; common thin clay films on peds; 20 percent pebbles, 5 percent cobbles; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary. (4 to 7 inches thick)

Btk—10 to 13 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium and coarse subangular blocky structure; hard, friable, sticky and plastic; common fine roots; common fine tubular pores; common thin clay films on faces of peds; 20 percent pebbles, 5 percent cobbles; lime coatings on undersides of pebbles and many fine and medium soft masses; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (2 to 5 inches thick)

Bqkm—13 to 60 inches; white (10YR 8/1) indurated duripan with weakly or strongly cemented thin horizontal lenses; violently effervescent.

Type location: Lander County, Nevada, south part; approximately 10 miles east of Austin in the northern part of Smokey Valley, about 1,950 feet north and 1,900 feet west of the southeast corner of sec. 25, T. 19 N., R. 45 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 50 degrees F
Solum thickness and depth to duripan: 8 to 14 inches
Carbonates: Calcareous throughout, effervescence increasing with depth; segregated lime common in lower part of the solum

Control section: Clay content—18 to 27 percent; rock fragments—15 to 35 percent, mainly pebbles

A horizon:
Value—3 or 4 moist
Chroma—2 or 3
Reaction—mildly alkaline or moderately alkaline

Bt horizon:
Value—4 or 5 moist
Chroma—3 or 4
Texture—gravelly loam or gravelly clay loam
Clay content—25 to 35 percent
Structure—prismatic or subangular blocky
Reaction—moderately alkaline or strongly alkaline

Grina Series

The Grina series consists of shallow, well drained soils that formed in residuum weathered from soft sedimentary bedrock. Grina soils are on low rolling hills. Slopes are 15 to 50 percent. Mean annual precipitation is about 10 inches, and mean annual air temperature is about 48 degrees F.

Taxonomic class: Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents

Typical pedon: Grina gravelly loam, 15 to 30 percent slopes, in an area of the Grina-Grina, eroded-Caniwe association. Pebbles cover 40 percent of the soil surface:

A1—0 to 3 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine vesicular and tubular pores; strongly effervescent; 20 percent pebbles: strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary. (2 to 4 inches thick)

A2—3 to 5 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; few fine tubular and fine interstitial pores; 10 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary. (0 to 6 inches thick)

A3—5 to 11 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; 10 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary. (0 to 6 inches thick)

C—11 to 15 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; massive; soft, friable, slightly sticky and slightly plastic; common fine interstitial pores; 10 percent pebbles; violently effervescent; moderately alkaline (pH 8.4); clear irregular boundary. (4 to 12 inches thick)

Cr—15 inches; soft tuffaceous sediments with fractures 5 to 10 inches apart.

Type location: Lander County, Nevada; about 40 miles south of Battle Mountain, 1,400 feet north and 1,300 feet east of the southwest corner of sec. 8, T. 25 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to paralithic contact: 14 to 20 inches
Control section: Clay content—20 to 35 percent when mixed; texture—loam, silt loam, or silty clay loam; rock fragments—0 to 15 percent when mixed
Carbonate equivalent: 20 to 40 percent by weight of the less than 20-millimeter fraction
Other features: Thin Bk horizon immediately above the paralithic contact in some pedons

A horizon:
Hue—10YR or 2.5Y
Value—5 or 6 dry, 3 or 4 moist
Structure—very fine or fine granular; very thin to very thick platy; or subangular blocky
Consistence—soft to hard dry, very friable or friable moist, slightly sticky or sticky and slightly plastic or plastic wet

C horizon:
Hue—10YR or 2.5Y
Value—6, 7, or 8 dry, 5, 6, or 7 moist
Chroma—2, 3, or 4
Structure—weak or moderate, very fine to medium subangular blocky, very fine or fine angular blocky, or very thin to thick platy; massive in some pedons
Effervescence—strongly effervescent or violently effervescent

Cr horizon:
Hue—10YR to 5Y
Value—7 or 8 dry, 5 to 7 moist
Chroma—2 or 3
Consistence—soft sedimentary material; hard to extremely hard dry, firm to very firm moist
Other features—precipitated secondary carbonates or gypsum filaments or threads and iron and manganese stains along fracture planes in many pedons

Gund Series

The Gund series consists of very deep, somewhat poorly drained soils that formed in silty alluvium derived mainly from loess, volcanic ash, and mixed rock sources over lacustrine sediments. Gund soils are on lake plains and lake plain remnants. Slopes are 0 to 2 percent. Mean annual precipitation is about 8 inches, and mean annual temperature about 47 degrees F.

Taxonomic class: Fine-silty over clayey, mixed, nonacid, mesic Aquic Durorthidic Torriorthents

Typical pedon: Gund silt loam, in an area of the Gund-Umberland association, in Lander County, south part:

A—0 to 4 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate thin and medium platy structure; soft, very friable, sticky and slightly plastic; common very fine and fine roots; many very fine interstitial and vesicular pores; strongly alkaline (pH 8.7); gradual smooth boundary. (3 to 6 inches thick)

Cq1—4 to 14 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin and medium platy structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; 40 percent weak discontinuous silica cementation; strongly alkaline (pH 9.0); gradual smooth boundary. (6 to 12 inches thick)

Cq2—14 to 23 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; moderate thin and medium platy structure; hard, firm, brittle, slightly sticky and nonplastic; few very fine to coarse roots; common very fine tubular pores; weak continuous silica cementation; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary. (6 to 12 inches)

2C—23 to 38 inches; light gray (2.5Y 7/2) clay, light brownish gray (2.5Y 6/2) moist; common medium distinct olive yellow (2.5Y 6/6 moist) mottles; strong medium prismatic structure; hard, friable, sticky and very plastic; few very fine, fine, and medium roots; many very fine and fine interstitial and tubular pores; continuous moderately thick pressure faces; 60 percent of the faces of peds, pores, and root channels coated with reddish brown (5YR 4/4) iron and manganese stains; strongly effervescent; strongly alkaline (pH 8.9); clear wavy boundary. (10 to 20 inches thick)

2Cy—38 to 60 inches; pale yellow (5Y 7/3) silty clay, light olive gray (5Y 6/2) moist; many medium distinct olive yellow (2.5Y 6/6 moist) mottles; massive; hard, friable, very sticky and plastic; few very fine roots; many very fine tubular pores; common fine white (10YR 8/1) gypsum crystals; strongly effervescent; strongly alkaline (pH 9.0).

Type location: Lander County, Nevada, south part; approximately 55 miles southeast of Battle Mountain, about 1,600 feet north and 1,260 feet west of the southeast corner of sec. 19, T. 23 N., R. 48 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually moist in some part of the soil moisture control section from October through July, usually dry in August and September; apparent seasonal high water table at a depth of 3.0 to 3.5 feet from late winter to early summer; drained phases are recognized

Soil temperature: 47 to 52 degrees F

Depth to weak silica cementation: 3 to 6 inches

Depth to unconformable lacustrine sediments: 15 to 30 inches

Control section: Clay content—averages 18 to 25 percent in the upper part and 45 to 60 percent in the lower part; texture—silt loam in the upper part over silty clay or clay in the lower part

Reaction throughout the profile: Moderately alkaline or strongly alkaline

A horizon:

- Value—6 or 7 dry, 3, 4, or 5 moist
- Chroma—2 or 3
- Effervescence—commonly noneffervescent but slightly effervescent in some pedons
- Salt and sodium—strongly salt and sodium affected, concentrations decrease with increasing depth
- Other features—a thin A2 horizon, a 2Cg horizon, or both in some pedons

Cq horizon:

- Value—6 or 7 dry, 4 to 6 moist
- Chroma—3 or 4
- Cementation—30 to 60 percent discontinuous weak silica cementation in the upper part and continuous weak in the lower part
- Effervescence—commonly noneffervescent, but ranges to strongly effervescent in the upper subhorizons and strongly effervescent in the lower subhorizons

2C horizon:

- Hue—2.5Y or 10YR in the upper part and 2.5Y or 5Y in the lower part
- Value—7 or 8 dry in the upper part, 6 or 7 dry in the lower part, 5 or 6 moist
- Chroma—2 or 3
- Mottles and stains—iron and manganese stains coating 50 to 70 percent of the peds, pores, and

root channels; common or many distinct or prominent mottles
Segregated gypsum—few to many crystals in the 2Cy horizon

Handy Series

The Handy series consists of very deep, well drained soils that formed in alluvium derived from igneous rocks. Handy soils are on mountain valley fans, fan piedmonts, and ballenas. Slopes are 4 to 30 percent. Mean annual precipitation is about 11 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Fine, montmorillonitic, frigid Xerollic Haplargids

Typical pedon: Handy loam, 4 to 8 percent slopes, in an area of the Handy-Caniwe-Zoesta association. Pebbles cover 20 percent of the soil surface:

A1—0 to 3 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common fine vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary. (2 to 6 inches thick)

A2—3 to 6 inches; light brownish gray (10YR 6/2) fine sandy loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few fine tubular pores; 10 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary. (0 to 6 inches thick)

BA—6 to 9 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 4/3) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine and fine roots; common fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 8 inches thick)

Bt—9 to 17 inches; brown (10YR 5/3) clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; extremely hard, very firm, very sticky and very plastic; few fine roots; few fine tubular pores; many thick clay films on peds; 10 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (4 to 14 inches thick)

Btk1—17 to 23 inches; brown (10YR 5/3) gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; very hard, very firm, very sticky and very plastic; few fine roots; few fine tubular pores; many thick clay films on peds; 20 percent pebbles; few seams of secondary carbonates; slightly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 21 inches thick)

Btk2—23 to 38 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; few fine tubular pores; few moderately thick clay films on peds; 20 percent pebbles; many lime seams; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (0 to 20 inches thick)

Bk—38 to 60 inches; very pale brown (10YR 7/3) gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; very few fine tubular pores; common very fine very dark gray (10YR 3/1) manganese stains; 25 percent pebbles; common lime seams; strongly effervescent; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; about 40 miles south of Battle Mountain, approximately 350 feet south and 2,000 feet west of the northeast corner of sec. 29, T. 25 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 45 to 47 degrees F
Control section: Clay content—40 to 50 percent; rock fragments—0 to 30 percent, mainly pebbles
Depth to lime: 12 to 23 inches
Depth to Bk horizon: 20 to 40 inches

A horizon:
- Value—4 to 6 dry, greater than 5.5 when the uppermost 7 inches is mixed; 3 or 4 moist
- Chroma—2 or 3
- Structure—granular or thin to thick platy
- Reaction—neutral or mildly alkaline

Bt and Btk horizons:
- Hue—10YR or 7.5YR, 5YR in some pedons
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—2 to 4
- Texture—clay or gravelly clay
- Structure—moderate or strong angular blocky or prismatic
- Reaction—neutral to moderately alkaline, commonly becoming more alkaline with depth

Bk horizon:
- Texture—gravelly loam to very gravelly loamy sand
- Rock fragments—15 to 60 percent, mainly pebbles
- Other features—strongly or violently effervescent
- Reaction—moderately alkaline or strongly alkaline

Hapgood Series

The Hapgood series consists of very deep, well drained soils that formed mainly in colluvium derived from volcanic rocks and in loess and volcanic ash. Hapgood soils are on side slopes of mountains. Slopes are 15 to 75 percent. Mean annual precipitation is about 16 inches, and mean annual temperature is about 42 degrees F.

Taxonomic class: Loamy-skeletal, mixed Pachic Cryoborolls

Typical pedon: Hapgood gravelly loam, 30 to 50 percent slopes, in an area of the Newlands-Packer-Hapgood association, moderately steep, in Lander County, south part. Pebbles cover 10 percent of the soil surface:

A1—0 to 7 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable, slightly sticky and plastic; many very fine and fine and few medium and coarse roots; many very fine interstitial pores; 20 percent pebbles; neutral (pH 6.8); diffuse wavy boundary. (0 to 8 inches)

A2—7 to 17 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate coarse subangular blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and plastic; many very fine and fine and few medium and coarse roots; many very fine interstitial pores; 15 percent pebbles, 5 percent cobbles; neutral (pH 6.8); gradual wavy boundary. (4 to 12 inches thick)

A3—17 to 33 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine and few medium and coarse roots; common very fine and fine interstitial pores; 30 percent pebbles, 15 percent cobbles; neutral (pH 6.8); gradual wavy boundary. (0 to 20 inches thick)

AC—33 to 40 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; few very fine and fine interstitial pores; 30 percent pebbles, 15 percent cobbles; neutral (pH 6.8); clear wavy boundary. (0 to 12 inches thick)

C—40 to 60 inches; light yellowish brown (10YR 6/4) very cobbly loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, sticky and plastic; few fine interstitial pores; 15 percent pebbles, 30 percent cobbles and 10 percent stones; neutral (pH 7.2).

Type location: Lander County, Nevada, south part; about 19 miles north of Austin, approximately 1,300 feet west and 2,280 feet north of the southeast corner of sec. 15, T. 20 N., R. 46 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from late July through early October
Mean annual soil temperature: 38 to 47 degrees F
Mean summer soil temperature: 55 to 59 degrees F
Mollic epipedon thickness: 16 to 60 inches
Depth to bedrock: 40 to more than 80 inches
Control section: Texture—predominantly loam but includes strata of fine sandy loam, sandy loam, silt loam, or clay loam; clay content—18 to 27 percent; rock fragments—35 to 50 percent, dominantly pebbles
Profile reaction: Slightly acid or neutral

A horizon:
- Value—2, 3, 4, or 5 dry, 2 or 3 moist
- Chroma—1, 2, or 3 in most pedons, chroma of 1 common only in A1 horizon, chroma of 3 common only in A3 horizon or below
- Structure—platy, subangular blocky, angular; massive in some pedons
- Base saturation—50 to 75 percent in upper part

C horizon:
- Hue—10YR or 7.5YR
- Value—4, 5, 6, or 7 dry, 3, 4, or 5 moist
- Chroma—2 to 6
- Features—horizon not present in some pedons where the mollic epipedon rests on the bedrock at depths of less than 48 inches

Havingdon Series

The Havingdon series consists of moderately deep, well drained soils that formed in residuum derived from chert and shale with some influence from loess and volcanic ash. Havingdon soils are on side slopes of mountains and foothills. Slopes are 15 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Xerollic Haplargids

Typical pedon: Havingdon gravelly silt loam, 20 to 50 percent slopes, in an area of the Humdun-

Havingdon-Bucan association. Pebbles cover 30 percent and stones 10 percent of the soil surface:

A—0 to 3 inches; pale brown (10YR 6/3) gravelly silt loam, brown (10YR 4/3) moist; moderate very thin and thin platy structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine tubular pores; 20 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary. (1 to 4 inches thick)

BA—3 to 8 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; many very fine, common fine and medium, and few coarse roots; many very fine tubular pores; 40 percent pebbles; mildly alkaline (pH 7.8); gradual wavy boundary. (3 to 7 inches thick)

Bt1—8 to 14 inches; light yellowish brown (10YR 6/4) extremely gravelly clay, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; very hard, firm, sticky and plastic; common very fine, few fine and medium, and few coarse roots; many very fine tubular pores; common thick clay films on faces of peds and lining pores; 65 percent pebbles; moderately alkaline (pH 8.0); abrupt wavy boundary. (6 to 15 inches thick)

Bt2—14 to 22 inches; pale brown (10YR 6/3) extremely gravelly clay, brown (10YR 5/3) moist; weak medium subangular blocky structure; very hard, firm, sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 80 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary. (0 to 4 inches thick)

R—22 to 30 inches; fractured chert; medium soft lime masses along fractures.

Type location: Lander County, Nevada; about 11 miles east of Battle Mountain, approximately 2,300 feet south and 1,300 feet west of the northeast corner of sec. 1, T. 31 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in some part from late October through early June

Soil temperature: 48 to 52 degrees F

Depth to bedrock: 20 to 26 inches

Depth to base of the Bt horizon: 20 to 26 inches

Control section: Clay content—35 to 45 percent; rock fragments—50 to 80 percent pebbles, dominantly angular chert and shale

A horizon:
- Value—3 or 4 moist
- Chroma—2 or 3
- Structure—weak or moderate, very thin to medium platy; massive in some pedons
- Consistence—soft or slightly hard dry
- Reaction—neutral or mildly alkaline

BA horizon:
- Value—5 or 6 dry, 4 or 5 moist
- Texture—very gravelly sandy clay loam or very gravelly clay loam
- Rock fragments—35 to 60 percent pebbles
- Consistence—slightly hard or hard dry, very friable to firm moist, slightly sticky or sticky wet
- Reaction—neutral to moderately alkaline

Bt horizon:
- Value—5 or 6 dry or moist
- Chroma—3 or 4
- Texture—very gravelly clay, very gravelly sandy clay, or extremely gravelly clay
- Rock fragments—50 to 80 percent angular chert and shale fragments, content increasing with depth
- Structure—weak or moderate, fine or medium angular or subangular blocky; massive in some pedons
- Consistence—hard or very hard dry, very friable to firm moist, sticky or very sticky and plastic or very plastic wet
- Reaction—neutral to moderately alkaline
- Secondary lime—soft masses of lime accumulation in bedrock fractures and in the lower 1 or 2 inches in some pedons having a thicker solum

R horizon:
- Generally well fractured, some roots and thin to moderately thick clay films in the fractures to a depth of up to 12 inches in some pedons

Hessing Series

The Hessing series consists of very deep, well drained soils that formed in loess and silty alluvium with some influence from volcanic ash over coarse alluvium derived from mixed sediments of mostly tuff, basalt, rhyolite, and andesite. Hessing soils are on fan skirts and inset fans. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Typic Camborthids

Typical pedon: Hessing silt loam, 0 to 2 percent slopes:

A—0 to 4 inches; light brownish gray (2.5Y 6/2) silt

loam, dark grayish brown (2.5Y 4/2) moist; moderate thin and thick platy structure; slightly hard, very friable, slightly sticky and plastic; few very fine, fine, and medium roots; many vesicular pores; moderately alkaline (pH 8.0); abrupt smooth boundary. (3 to 7 inches thick)

Bw—4 to 11 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 5/3) moist; moderate coarse prismatic structure; hard, friable, sticky and very plastic; many very fine and few fine roots; many very fine interstitial and tubular pores; moderately alkaline (pH 8.4); abrupt smooth boundary. (6 to 9 inches thick)

Bqk—11 to 13 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; weak thick platy structure; hard, very friable and firm, sticky and plastic; few very fine roots; common very fine tubular pores; 50 percent weak discontinuous silica cementation; 10 percent weak rounded 15- to 25-millimeter durinodes; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (0 to 3 inches thick)

C—13 to 18 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; 5 percent fine pebbles; strongly alkaline (pH 9.0); abrupt wavy boundary. (4 to 8 inches thick)

2Ck1—18 to 26 inches; light gray (10YR 7/2) gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 25 percent pebbles; common fine lime filaments and lime coatings on pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (5 to 10 inches thick)

2Ck2—26 to 30 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 30 percent pebbles; few fine lime filaments; slightly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary. (4 to 14 inches thick)

3Ck3—30 to 60 inches; variegated extremely gravelly loamy coarse sand; single grained; loose, nonsticky and nonplastic; few very fine roots; 65 percent pebbles; many fine lime filaments; slightly effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; approximately 61 miles southwest of Battle Mountain; about 790 feet east and 300 feet north of the southwest corner of sec. 7, T. 24 N., R. 41 E.

Range in Characteristics

Soil moisture: Usually dry, moist in some part for short periods from October through May

Soil temperature: 47 to 53 degrees F

Depth to base of Bw horizon: 11 to 16 inches

Depth to unconformable 2Ck horizon: 15 to 25 inches

Depth to unconformable 3Ck horizon: 25 to 36 inches

Control section: Clay content—8 to 18 percent when mixed; texture—averages gravelly loam or gravelly sandy loam; rock fragments—15 to 35 percent when mixed

Other features: As much as 50 percent thin, discontinuous, weak, silica-cemented lenses and as much as 20 percent weak durinodes in any horizon below a depth of 11 inches in some pedons

A horizon:
- Hue—2.5Y or 10YR
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—thin to thick platy; prismatic; massive in some pedons
- Reaction—moderately alkaline or strongly alkaline
- Other features—slightly effervescent surface due to calcareous dust recharge in some pedons

Bw horizon:
- Hue—2.5Y or 10YR
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Texture—silt loam or silty clay loam
- Structure—platy, prismatic, blocky; massive in some pedons

2Ck horizon:
- Texture—gravelly loam or gravelly sandy loam
- Clay content—15 to 27 percent
- Rock fragments—15 to 35 percent, mainly pebbles
- Consistence—slightly plastic or plastic wet

3Ck horizon:
- Texture—stratified very gravelly loamy coarse sand to extremely gravelly sand
- Rock fragments—50 to 70 percent, mainly pebbles
- Consistence—soft or loose dry, nonplastic or slightly plastic wet
- Reaction—mildly alkaline to strongly alkaline

Hooplite Series

The Hooplite series consists of very shallow, well drained soils that formed in residuum derived from rhyolitic rocks. Hooplite soils are on side slopes of hills and mountains. Slopes range from 30 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids

Typical pedon: Hooplite very gravelly fine sandy loam, 4 to 15 percent slopes, in an area of the Hooplite-Stingdorn association, in Lander County, south part:

A1—0 to 2 inches; light brownish gray (10YR 6/2) very gravelly fine sandy loam, dark grayish brown (10YR 4/2) moist; moderate medium platy structure; slightly hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; many fine and medium vesicular pores; 40 percent pebbles, 5 percent cobbles; slightly effervescent; mildly alkaline (pH 7.6); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 4 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate medium platy structure; soft, very friable, sticky and plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; 20 percent pebbles, 5 percent cobbles; common strongly effervescent thin lime coatings on undersides of rock fragments; slightly effervescent matrix; mildly alkaline (pH 7.8); clear wavy boundary. (0 to 4 inches thick)

Bt—4 to 8 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine interstitial and tubular pores; 50 percent pebbles, 5 percent cobbles; common thin lime coatings on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.0); clear wavy boundary. (3 to 8 inches thick)

R—8 inches; hard fractured rhyolitic tuff.

Type location: Lander County, Nevada, south part; approximately 25 miles northeast of Austin, about 1,100 feet south of the northwest corner of sec. 25, T. 22 N., R. 46 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist during winter and early spring

Soil temperature: 47 to 52 degrees F

Soil thickness and depth to hard bedrock: 6 to 14 inches

Control section: Clay content—18 to 25 percent when mixed; rock fragments—35 to 50 percent pebbles, 0 to 10 percent cobbles

Reaction throughout the profile: Mildly alkaline or moderately alkaline

Other features: As much as 3 inches of highly fractured bedrock overlying the lithic contact in some pedons

A horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3
- Carbonates—noneffervescent or slightly effervescent
- Structure—platy or subangular blocky

Bt horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 to 4
- Texture—very gravelly loam, very gravelly clay loam
- Rock fragments—35 to 50 percent
- Structure—subangular blocky or granular
- Carbonates—slightly effervescent or strongly effervescent

Hopeka Series

The Hopeka series consists of very shallow, well drained soils that formed in residuum and colluvium derived from limestone and dolostone. Hopeka soils are on side slopes of mountains. Slopes are 30 to 50 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy-skeletal, carbonatic, frigid Lithic Xeric Torriorthents

Typical pedon: Hopeka very gravelly loam, 30 to 50 percent slopes, in an area of the Kram-Hopeka-Rock outcrop association, in Lander County, south part. Pebbles cover 20 percent and cobbles 25 percent of the soil surface:

A—0 to 4 inches; light brownish gray (10YR 6/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine and few medium and coarse roots; many very fine and fine interstitial and common fine tubular pores; 50 percent pebbles; lime coatings on undersides of pebbles; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (1 to 4 inches thick)

C—4 to 8 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium and few coarse roots; common fine interstitial, common very fine and fine, and few medium tubular pores; 55 percent pebbles; lime coatings on undersides of pebbles; violently effervescent; moderately alkaline

(pH 8.4); abrupt smooth boundary. (3 to 8 inches thick)
R—8 inches; limestone.

Type location: Lander County, Nevada, south part; about 20 miles west of Austin, approximately 550 feet south and 1,050 feet west of the northeast corner of sec. 32, T. 21 N., R. 42 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 43 to 47 degrees
Depth to bedrock: 4 to 10 inches
Control section: Clay content—18 to 25 percent; rock fragments—35 to 60 percent limestone or dolostone pebbles, cobbles, or stones
Carbonates: Violently effervescent but surface layer strongly effervescent in some pedons; 40 to 85 percent calcium carbonate equivalent
Reaction throughout the profile: Moderately alkaline or strongly alkaline

A horizon:
Hue—10YR or 7.5YR
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 or 3

C horizon:
Hue—10YR or 7.5YR
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 or 3
Structure—weak to moderate subangular blocky; massive in some pedons

Humboldt Series

The Humboldt series consists of very deep, poorly drained soils that formed mainly in silty alluvium derived from mixed rock sources and in volcanic ash. Humboldt soils are on flood plains. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 50 degrees F.

Taxonomic class: Fine, montmorillonitic (calcareous), mesic Fluvaquentic Haplaquolls

Typical pedon: Humboldt silty clay loam, slightly saline, 0 to 2 percent slopes:

A1—0 to 2 inches; gray (10YR 5/1) silty clay, very dark gray (10YR 3/1) moist; strong medium and coarse prismatic structure parting to moderate medium and coarse subangular blocky; hard, friable, sticky and plastic; many very fine and fine random and common medium oblique and horizontal roots; common very fine interstitial and tubular pores; less than ¼-inch-thick light gray (10YR 6/1) and dark gray (10YR 4/1 moist) depositional surface crust; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 12 inches thick)
A2—2 to 7 inches; gray (10YR 5/1) silty clay, very dark gray (10YR 3/1) moist; common fine distinct strong brown (7.5YR 5/6) mottles; strong medium and coarse prismatic structure parting to strong very fine, fine, and medium angular blocky; hard, firm, sticky and very plastic; many very fine random, few fine vertical, and few medium horizontal and oblique roots; few very fine tubular and common very fine interstitial pores; moderately alkaline (pH 8.4); clear wavy boundary. (5 to 9 inches thick)
A3—7 to 11 inches; gray (10YR 5/1) silty clay, very dark gray (10YR 3/1) moist; common fine distinct strong brown (7.5YR 5/6) mottles; moderate coarse prismatic structure parting to strong fine and medium subangular blocky; hard, firm, sticky and very plastic; common very fine interstitial and tubular pores; violently effervescent; moderately alkaline (pH 8.4); clear irregular boundary. (0 to 10 inches thick)
C1—11 to 16 inches; gray (10YR 6/1) silty clay, very dark gray (10YR 3/1) moist; moderate coarse and very coarse prismatic structure parting to moderate medium and coarse subangular blocky; hard, firm, sticky and very plastic; common very fine random and few fine and medium vertical and oblique roots; few very fine interstitial and many very fine tubular pores; strongly effervescent; moderately alkaline (pH 8.4); clear irregular boundary. (4 to 17 inches thick)
C2—16 to 34 inches; light gray (10YR 6/1) silty clay loam, dark gray (10YR 4/1) moist; few fine distinct brown (7.5YR 5/4) mottles, dark brown (7.5YR 4/4) moist; massive; hard, firm, sticky and very plastic; few very fine and fine random and few medium vertical and oblique roots; many very fine vesicular and tubular pores; violently effervescent; strongly alkaline (pH 8.6); gradual smooth boundary. (5 to 18 inches thick)
Ck1—34 to 51 inches; light gray (10YR 7/1) silty clay loam, grayish brown (10YR 5/2) moist; common fine distinct brown (7.5YR 4/4) mottles, yellowish red (5YR 4/6) moist; massive; hard, friable, sticky and plastic; few very fine and fine random and few medium oblique roots; common very fine vesicular and many very fine tubular pores; common thin clay films lining pores; about 1 percent medium irregular lime concretions; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 20 inches thick)
Ck2—51 to 61 inches; light gray (10YR 6/1) silty clay, dark gray (10YR 4/1) moist; common fine distinct

light yellowish brown (2.5Y 6/4 moist) mottles; massive; hard, friable, sticky and very plastic; very few very fine random roots; many very fine vesicular and tubular pores; many thin clay films lining pores; 5 percent fine and medium irregular lime concretions; common fine distinct white (10YR 8/1) lime mottles, light gray (10YR 6/1) moist; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (5 to 30 inches thick)

Ck3—61 to 67 inches; light gray (10YR 6/1) silty clay, grayish brown (10YR 5/2) moist; many fine distinct weak red (2.5YR 4/2) and dark reddish brown (2.5YR 3/4) mottles, dark reddish brown (2.5YR 3/4) and reddish brown (2.5YR 4/4) moist; massive; hard, friable, sticky and very plastic; many very fine vesicular and tubular pores; many thin clay films lining pores; 10 percent fine and medium irregular lime concretions; violently effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; about 1.3 miles northeast of Battle Mountain, approximately 530 feet south and 1,320 feet east of the northwest corner of sec. 16, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually saturated for 1 month or more during most years unless drained
Soil temperature: 50 to 54 degrees F
Mollic epipedon thickness: 10 to 24 inches
Control section: Clay content—35 to 45 percent; texture—silty clay loam to clay with minor substrata of silt loam in some pedons
Reaction throughout the profile: Mildly alkaline to very strongly alkaline, the higher values only in sodium-affected areas
Effervescence: Slightly effervescent to strongly effervescent throughout; some noneffervescent strata below 20 inches in some pedons
Carbonates: Calcium carbonate equivalent is less than 15 percent
Iron mottles: Distinct or prominent iron mottles in the lower part of the mollic epipedon or immediately below; if no mottles, matrix chroma is 1 or 0
Other features: Stratified very fine sandy loam to fine sand below a depth of 30 inches in some pedons

A horizon:
Hue—10YR or 2.5Y
Value—4 or 5 dry, 6 on surface of some pedons because of desposition, 2 or 3 moist
Chroma—1 or 2
Structure—moderate or strong, fine to coarse blocky, platy, prismatic, or granular or weak fine to coarse subangular blocky in the Ap horizon (where present)
Consistence—slightly hard or hard
Organic matter content—2 to 4 percent
Other features—buried A horizons are common

C horizon:
Hue—10YR to 5GY, or N
Value—6 or 7 dry, 3 to 5 moist; volcanic ash layers are 8 dry, 6 moist
Chroma—0 to 3
Structure—moderate or strong prismatic or blocky in the upper part; weak in the lower part; massive in the lower part in some pedons
Carbonates—few to many very fine to medium lime concretions or soft segregations in some subhorizons

Humdun Series

The Humdun series consist of very deep, well drained soils formed in some loess and a lesser amount of volcanic ash over loamy alluvium and residuum of mostly extrusive volcanic rocks. Humdun soils are on side slopes of foothills. Slopes are 15 to 50 percent. Mean annual precipitation is about 11 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Coarse-loamy, mixed, frigid Durixerollic Camborthids

Typical pedon: Humdun silt loam, gravelly substratum, 15 to 50 percent slopes, in an area of the Bojo-Humdun-Boulflat association:

A1—0 to 3 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.6); abrupt smooth boundary. (2 to 8 inches thick)

A2—3 to 6 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; 3 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary. (0 to 6 inches thick)

Bw1—6 to 12 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; 5 percent pebbles; moderately alkaline (pH 8.0); gradual wavy boundary. (6 to 11 inches thick)

Bw2—12 to 24 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; common weakly cemented durinodes; moderately alkaline (pH 8.4); gradual wavy boundary. (5 to 12 inches thick)

Bqk1—24 to 30 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; many very fine tubular pores; many strongly cemented coarse durinodes; few lime coatings on undersides of pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (6 to 13 inches thick)

Bqk2—30 to 41 inches; very pale brown (10YR 7/4) loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; many weakly cemented durinodes; common soft lime masses; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (0 to 15 inches thick)

2Bk—41 to 60 inches; light gray (10YR 7/2) very gravelly loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and plastic; few very fine roots; many very fine tubular pores; 45 percent pebbles; common weakly cemented durinodes; violently effervescent; strongly alkaline (pH 8.8).

Type location: Lander County, Nevada; about 9 miles southeast of Battle Mountain, approximately 1,500 feet south and 1,500 feet east of the northwest corner of sec. 35, T. 32 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in some part from late October through early June

Soil temperature: 45 to 47 degrees F

Combined thickness of A and Bw horizons and depth to Bqk horizon: 24 to 33 inches

Control section: Clay content—10 to 15 percent; texture—loam, very fine sandy loam, or silt loam; rock fragments—less than 5 percent when mixed

A horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3
- Structure—weak or moderate, fine or medium granular or subangular blocky or thin or medium platy
- Consistence—soft or slightly hard dry
- Reaction—neutral or mildly alkaline
- Other features—pedons that have a dark colored A horizon do not meet the thickness requirement for a mollic epipedon

Bw horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Structure—fine to coarse subangular blocky or prismatic; massive in some pedons
- Reaction—neutral to moderately alkaline
- Other features—up to 20 percent durinodes in the lower part of the Bw horizon in some pedons

Bqk horizons:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2, 3, or 4
- Consistence—soft, slightly hard, or hard dry
- Reaction—moderately alkaline or strongly alkaline
- Cementation—20 to 80 percent durinodes that are hard to extremely hard dry and firm or very firm moist
- Other features—white lime segregations in most pedons; very gravelly loam 2Bqk horizon at a depth of 40 to 60 inches in some pedons

Isolde Series

The Isolde series consists of very deep, excessively drained soils that formed in eolian sand from mixed rock sources. Isolde soils are on stabilized dunes over lake beds, playas, terraces, alluvial fans, and hills. Slopes are 0 to 30 percent. Mean annual precipitation is about 6 inches, and mean annual temperature is about 52 degrees F.

Taxonomic class: Mixed, mesic Typic Torripsamments

Typical pedon: Isolde fine sand, 4 to 30 percent slopes, in an area of the Bubus-Isolde association:

A—0 to 7 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grained; loose, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores; moderately alkaline (pH 8.2); clear smooth boundary. (3 to 20 inches thick)

C1—7 to 26 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grained; loose, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores; moderately alkaline (pH 8.4); diffuse smooth boundary. (0 to 40 inches thick)

C2—26 to 60 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grained; loose, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; slightly effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; approximately 20 miles southwest of Battle Mountain, about 2,100 feet west and 1,300 feet south of the northeast corner of sec. 4, T. 29 N., R. 42 E.

Range in Characteristics

Soil moisture: Usually dry from April through mid-November, moist for short periods from mid-November through March

Soil temperature: 53 to 57 degrees F

Control section: Texture—commonly fine sand; sand with 50 to 80 percent passing the number 40 sieve and 1 to 10 percent passing the number 200 sieve in some pedons

Reaction throughout the profile: Neutral to moderately alkaline

A horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 or 3

C horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Other features—2C horizon below a depth of 40 inches in some pedons; moderately to strongly alkaline and noneffervescent to strongly effervescent in the lower part of the C horizon in some pedons

Itca Series

The Itca series consists of shallow, well drained soils that formed in residuum derived from extrusive volcanic and pyroclastic rocks. Itca soils are on side slopes of mountains. Slopes are 15 to 50 percent. Mean annual precipitation is about 14 inches, and mean annual temperature is about 43 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls

Typical pedon: Itca extremely stony loam, 50 to 75 percent slopes, in an area of the Itca-Ninemile-Rock outcrop association, in Lander County, south part. Pebbles cover 20 percent, cobbles 35 percent, and stones 25 percent of the soil surface:

A1—0 to 6 inches; grayish brown (10YR 5/2) extremely stony loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure parting to weak very fine granular; slightly hard, very friable, nonsticky and slightly plastic; many very fine and few fine roots; many fine interstitial pores; 30 percent pebbles, 15 percent cobbles, 15 percent stones; neutral (pH 7.2); clear wavy boundary. (1 to 7 inches thick)

A2—6 to 9 inches; brown (10YR 5/3) gravelly sandy loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common fine interstitial pores; 20 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.4); abrupt wavy boundary. (0 to 6 inches thick)

Bt1—9 to 13 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, very sticky and very plastic; common fine and few medium and coarse roots; common fine interstitial pores; many thin clay films in pores and on peds; 25 percent pebbles, 15 percent cobbles; mildly alkaline (pH 7.4); clear irregular boundary. (3 to 8 inches thick)

Bt2—13 to 17 inches; light yellowish brown (10YR 6/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; hard, firm, very sticky and very plastic; few fine, medium, and coarse roots; few fine tubular pores; common moderately thick clay films in pores and on peds; 20 percent pebbles, 20 percent cobbles, 10 percent stones; mildly alkaline (pH 7.4); abrupt broken boundary. (3 to 10 inches thick)

R—17 inches; fractured andesite.

Type location: Lander County, Nevada, south part; approximately 22 miles east of Austin, about 1,950 feet east and 320 feet south of the northwest corner of sec. 21, T. 19 S., R. 40 E. (part of the BLM private contract in Lander County)

Range in Characteristics

Soil moisture: Moist in winter and spring, dry 60 to 90 consecutive days from July through October

Soil temperature: 43 to 47 degrees F

Mollic epipedon thickness: 7 to 15 inches, may include the upper Bt horizon

Depth to bedrock: 10 to 20 inches

A horizon:
Hue—10YR or 7.5YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—weak or moderate, medium to thick platy or medium to coarse subangular blocky
Consistence—soft or slightly hard dry, very friable or friable moist, nonsticky to slightly sticky and slightly plastic to plastic wet
Reaction—neutral or mildly alkaline

Bt horizon:
Hue—7.5YR or 10YR
Value—4, 5, or 6 dry and 3 or 4 moist
Chroma—2, 3, or 4
Texture—clay or clay loam
Clay content—35 to 45 percent
Rock fragments—35 to 60 percent when averaged, mainly pebbles and cobbles; up to 85 percent in some subhorizons of some pedons
Consistence—slightly hard or hard dry, friable or firm moist, and sticky or very sticky wet
Reaction—neutral to moderately alkaline
Other features—horizon tongues into the bedrock fractures in shallower pedons

BC or C horizon (where present):
A thin horizon composed mainly of very soft decomposing rock

Izod Series

The Izod series consists of shallow, somewhat excessively drained soils that formed in residuum and colluvium derived from limestone. Izod soils are on crests and side slopes of hills and mountains and rock core areas of fan piedmont remnants. Slopes are 15 to 75 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Loamy-skeletal, carbonatic, mesic Lithic Xeric Torriorthents

Typical pedon: Izod extremely cobbly fine sandy loam, 15 to 50 percent slopes, in an area of the Izod-Rock outcrop association. Pebbles cover 30 percent, cobbles 25 percent, and stones 5 percent of the soil surface:

A—0 to 4 inches; pale brown (10YR 6/3) extremely cobbly loam, dark brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; many very fine vesicular pores; 35 percent pebbles, 35 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (1 to 4 inches thick)

C—4 to 10 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; common very fine interstitial pores; 30 percent pebbles, 10 percent cobbles, 5 percent stones; few fine soft lime masses; violently effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary. (3 to 12 inches thick)

2R—10 inches; limestone; weathered and fractured in the upper 1 inch; few fine roots in fractures; common lime pendants on rock fragments; hard at a depth of 11 inches.

Type location: Lander County, Nevada; about 52 miles southwest of Battle Mountain, approximately 1,800 feet north and 800 feet east of the southwest corner of sec. 5, T. 24 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry, moist late fall to early spring
Soil temperature: 47 to 50 degrees F
Depth to bedrock: 7 to 14 inches
Control section: Clay content—18 to 25 percent; rock fragments—40 to 75 percent, mainly pebbles
Reaction throughout the profile: Mildly alkaline or moderately alkaline
Calcium carbonate equivalent: 50 to 60 percent
Other features: Silica and lime laminae covering up to 75 percent of the bedrock surface area

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Structure—weak or moderate, very thin or thin platy
Effervescence—strong or violent

C horizon:
Value—6 to 8 dry, 4 or 5 moist
Chroma—2 or 3
Structure—weak or moderate subangular blocky; massive in some pedons

Jenor Series

The Jenor series consists of moderately deep, well drained soils that formed mainly in alluvium derived from mixed rock sources and in loess. Jenor soils are on fan piedmont remnants. Slopes are 0 to 8 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Typic Durorthids

Typical pedon: Jenor very fine sandy loam, 0 to 2 percent slopes, in an area of the Jenor-Blacka very fine sandy loams:

A—0 to 6 inches; light gray (10YR 7/2) very fine sandy loam, brown (10YR 4/3) moist; moderate thin to thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; many very fine vesicular pores; very slightly effervescent in spots; strongly alkaline (pH 8.6); clear wavy boundary. (6 to 8 inches thick)

Bw—6 to 16 inches; light gray (10YR 7/2) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and slightly plastic; common fine and few medium oblique roots; many very fine interstitial and tubular pores; strongly alkaline (pH 8.6); clear wavy boundary. (4 to 10 inches thick)

Bk—16 to 22 inches; very pale brown (10YR 7/3) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and slightly plastic; few fine and medium oblique and horizontal roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (0 to 6 inches thick)

Bqk—22 to 26 inches; very pale brown (10YR 8/3) loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, nonsticky and slightly plastic; very few fine and medium roots; common very fine tubular pores; about 20 percent 2- to 10-millimeter, weak durinodes; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (4 to 16 inches thick)

Bqkm1—26 to 43 inches; white (10YR 8/2) indurated silica-cemented duripan, very pale brown (10YR 7/3) moist; common fine distinct dark yellowish brown (10YR 4/4 moist) mottles; strong medium and very thick platy structure; very hard, extremely firm; very few fine horizontal roots; few very fine tubular pores; peds have continuous, 1/16- to 1/4-inch-thick very pale brown (10YR 8/3) silica laminae; violently effervescent; moderately alkaline (pH 8.4); gradual smooth boundary. (6 to 20 inches thick)

Bqkm2—43 to 56 inches; white (10YR 8/2) indurated silica-cemented duripan, very pale brown (10YR 7/3) moist; few fine distinct light yellowish brown (10YR 6/4 moist) and dark yellowish brown (10YR 4/4 moist) mottles; strong thick platy structure; very hard, extremely firm; common very fine tubular pores; plate surfaces have as much as 1/16-inch-thick silica laminae; violently effervescent; moderately alkaline (pH 8.4); gradual smooth boundary. (0 to 13 inches thick)

Bqkm3—56 to 60 inches; white (10YR 8/2) indurated silica-cemented duripan, very pale brown (10YR 7/4) moist; strong very thick platy structure; very hard, extremely firm; common very fine tubular pores; plate surfaces have as much as 1/16-inch-thick very pale brown (10YR 7/3) and pale brown (10YR 6/3 moist) silica laminae; violently effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; approximately 12 miles north of Battle Mountain, about 1,050 feet north and 1,050 feet east of the southwest corner of sec. 7, T. 34 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in part for short periods from late October through May

Soil temperature: 47 to 51 degrees F

Depth to indurated duripan: 20 to 30 inches

Control section: Texture—fine sandy loam, sandy loam, or loam; clay content—8 to 18 percent; rock fragments—up to 15 percent, mainly pebbles

Reaction throughout the profile: Moderately alkaline or strongly alkaline

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Consistence—soft or slightly hard dry, friable or very friable moist

Bw horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2, 3, or 4
- Texture—fine sandy loam or loam
- Structure—weak or moderate, medium or coarse subangular blocky; massive in some pedons

Bqk horizon:
- Value—7 or 8 dry, 4 to 6 moist
- Chroma—3 to 6
- Texture—fine sandy loam, loam, or sandy loam
- Rock fragments—up to 15 percent, mainly pebbles
- Effervescence—strong or violent
- Other features—up to 10 percent pan fragments near the Bqk horizon boundary in some pedons

Jung Series

The Jung series consists of shallow, well drained soils that formed in residuum derived from metavolcanic and volcanic rocks. Jung soils are on crests and side slopes of mountains and hills. Slopes are 8 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Lithic Xerollic Haplargids

Typical pedon: Jung very cobbly loam, 15 to 30 percent slopes, in an area of the Jung-Newpass association, in Lander County, south part. Pebbles cover 20 percent and cobbles 25 percent of the surface:

A1—0 to 3 inches; light brownish gray (10YR 6/2) very cobbly loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure parting to weak very fine granular; soft, very friable, slightly sticky and slightly plastic; few fine roots; many fine vesicular pores; 25

percent pebbles, 25 percent cobbles; neutral (pH 7.0); clear smooth boundary. (1 to 3 inches thick)

A2—3 to 8 inches; light brownish gray (10YR 6/2) cobbly loam, dark brown (10YR 3/3) moist; weak thin platy structure parting to weak very fine granular; soft, very friable, slightly sticky and slightly plastic; common fine roots; many very fine interstitial pores; 10 percent pebbles, 20 percent cobbles; neutral (pH 7.2); clear wavy boundary. (2 to 6 inches thick)

Bt—8 to 15 inches; brown (10YR 5/3) very cobbly clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate medium and fine subangular blocky; very hard, firm, sticky and plastic; common fine roots; few very fine tubular pores; continuous thick clay films on peds; 20 percent pebbles, 20 percent cobbles; moderately alkaline (pH 8.4); gradual wavy boundary. (5 to 8 inches thick)

Btk—15 to 19 inches; pale brown (10YR 6/3) very cobbly clay loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots; few very fine tubular pores; thin patchy clay films on peds; 30 percent pebbles, 20 percent cobbles; lime coatings on undersides of rock fragments; slightly effervescent; moderately alkaline (pH 8.4); abrupt irregular boundary. (3 to 5 inches thick)

R—19 inches; fractured hard rhyolite; fractures more than 4 inches apart.

Type location: Lander County, Nevada, south part; in cut at side of power line access road, approximately 17.5 miles west of Austin near Mount Airy, about 50 feet south and 1,300 feet west of the northeast corner of sec. 5, T. 19 N., R. 41 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to bedrock: 14 to 20 inches
Control section: Clay content—35 to 45 percent; rock fragments—35 to 50 percent, mainly pebbles and cobbles

A horizon:
Value—3 or 4 moist
Chroma—2 or 3
Structure—weak or moderate, thin to medium platy
Reaction—neutral or mildly alkaline

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4
Texture—very gravelly clay loam, very cobbly clay loam, very cobbly clay
Structure—weak to strong, prismatic or angular blocky structure; subangular blocky in the lower subhorizon of some pedons
Reaction—moderately alkaline or strongly alkaline

Btk horizon:
Carbonates—slightly effervescent or strongly effervescent

Kelk Series

The Kelk series consists of very deep, well drained soils that formed in some loess that contains volcanic ash but mostly in mixed silty alluvium derived mainly from mixed rock sources. Kelk soils are on inset fans and inset fan remnants. Slopes are 0 to 4 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is 48 degrees F.

Taxonomic class: Fine-silty, mixed, mesic Durixerollic Camborthids

Typical pedon: Kelk silt loam, saline, 0 to 4 percent slopes:

A—0 to 3 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; moderately alkaline (pH 8.4); clear wavy boundary. (2 to 4 inches thick)

Bw1—3 to 12 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; moderately alkaline (pH 8.4); clear wavy boundary. (0 to 4 inches thick)

Bw2—12 to 18 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; moderately alkaline (pH 8.4); clear wavy boundary. (6 to 15 inches thick)

Bqk1—18 to 29 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; few large distinct light brownish gray (2.5Y 6/2 dry) and few fine prominent yellowish brown (10YR 5/8 moist) relict mottles; massive; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; 40 percent 5- to 15-millimeter, moderately cemented durinodes; few fine lime filaments; slightly effervescent; moderately alkaline (pH 8.4); gradual irregular boundary. (0 to 15 inches thick)

Bqk2—29 to 42 inches; very pale brown (10YR 7/4) silt loam, yellowish brown (10YR 5/4) moist; few large distinct light brownish gray (2.5Y 6/2 dry) and few fine prominent yellowish brown (10YR 5/8 moist) relict mottles; massive; hard, firm, sticky and plastic; few very fine and fine roots; few very fine tubular pores; few fine lime filaments; weak continuous silica cementation; strongly effervescent; moderately alkaline (pH 8.2); gradual irregular boundary. (13 to 34 inches thick)

Bqk3—42 to 60 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; few large distinct light brownish gray (2.5Y 6/2 dry) and few fine prominent yellowish brown (10YR 5/8 moist) relict mottles; massive; soft, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 20 percent 5- to 15-millimeter, weakly cemented durinodes; common fine lime filaments; strongly effervescent; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; about 33 miles south of Battle Mountain, approximately 1,500 feet east and 1,500 feet south of the northwest corner of sec. 5, T. 26 N., R. 43 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to base of Bw horizon: 12 to 18 inches
Depth to weak continuous silica cementation: 13 to 35 inches
Depth to carbonates: 12 to 35 inches
Control section: Clay content—18 to 27 percent
Other features: Normally slightly or moderately salt affected below a depth of 24 to 48 inches

A horizon:
- Hue—10YR or 2.5Y
- Value—5 or 6 dry
- Chroma—2 or 3
- Structure—very thin or thin platy or very fine or fine prismatic; massive in some pedons
- Consistence—slightly sticky or sticky and slightly plastic or plastic
- Reaction—neutral to moderately alkaline
- Effervescence—noneffervescent or slightly effervescent

Bw horizon:
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—2 or 3
- Structure—blocky or prismatic; massive in some pedons
- Reaction—neutral to moderately alkaline; strongly alkaline where salt and sodium affected
- Effervescence—noneffervescent or slightly effervescent
- Other features—10 to 20 percent weak durinodes near the lower boundary in some pedons

Bq (where present) and Bqk horizons:
- Value—6 to 8 dry, and 3 to 6 moist
- Chroma—2, 3, or 4
- Texture—dominantly silt loam, thin strata of silty clay loam below a depth of 30 inches in some pedons
- Reaction—neutral to strongly alkaline, becoming more alkaline with depth
- Effervescence—slightly effervescent to violently effervescent in the Bqk horizon
- Cementation—subhorizons not continuously silica cemented contain 30 to 90 percent durinodes or are 20 to 50 percent discontinuous weakly silica cemented
- Other features—No relict mottles in the lower part of the Bqk horizon in some pedons; lenses of 5 to 15 percent pebbles in some Bqk subhorizons or an extremely gravelly substratum below a depth of 42 inches in some pedons

Kingingham Series

The Kingingham series consists of moderately deep, well drained soils that formed in a thin loess mantle over alluvium derived from mixed rock sources. Kingingham soils are on fan piedmonts. Slopes are 2 to 8 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Typic Nadurargids

Typical pedon: Kingingham gravelly very fine sandy loam, 2 to 8 percent slopes, in an area of the Kingingham-Golconda-Whirlo association. Pebbles cover 20 percent of the surface:

A1—0 to 3 inches; very pale brown (10YR 7/3) gravelly very fine sandy loam, dark brown (10YR 4/3) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; few fine and medium roots; many very fine and fine vesicular pores; 15 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 5 inches thick)

A2—3 to 7 inches; pale brown (10YR 6/3) gravelly very fine sandy loam, dark brown (10YR 4/3) moist; strong thick platy structure; hard, friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine and fine vesicular pores; 20 percent pebbles; moderately alkaline (pH 8.2); clear wavy boundary. (3 to 5 inches thick)

2Btnk1—7 to 12 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; strong medium angular blocky structure; slightly hard, very friable, very sticky and very plastic; common fine and medium roots; many very fine and fine tubular pores; common moderately thick clay films on faces of peds and lining pores; 15 percent pebbles; common fine lime in seams; slightly effervescent matrix; strongly alkaline (pH 8.6); clear wavy boundary. (3 to 6 inches thick)

2Btnk2—12 to 18 inches; yellowish brown (10YR 5/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; hard, firm, very sticky and very plastic; common fine and medium roots; common very fine tubular pores; many moderately thick and thick clay films on faces of peds and lining pores; 20 percent pebbles; common fine lime in seams; slightly effervescent matrix; strongly alkaline (pH 8.8); clear wavy boundary. (5 to 9 inches thick)

2Btnqk—18 to 22 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, firm, very sticky and very plastic; few fine roots; few very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 10 percent weakly cemented durinodes; 50 percent pebbles; common fine lime in seams; strongly effervescent; strongly alkaline (pH 8.6); abrupt irregular boundary. (3 to 8 inches thick)

2Bqkm1—22 to 28 inches; very pale brown (10YR 8/3) indurated duripan, very pale brown (10YR 7/4) moist; massive; extremely hard, extremely firm; violently effervescent; clear smooth boundary. (4 to 19 inches thick)

2Bqkm2—28 to 60 inches; very pale brown (10YR 8/3) indurated duripan with weakly to strongly cemented, thin, horizontal alternating lenses; very pale brown (10YR 7/4) moist; massive; violently effervescent.

Type location: Lander County, Nevada; about 20 miles south of Battle Mountain, about 2,630 feet south and 2,630 feet east of the northwest corner of sec. 6, T. 30 N., R. 43 E.

Range in Characteristics

Soil moisture: Moist for short periods in winter and early spring, dry from late May through October

Soil temperature: 47 to 52 degrees F

Depth to duripan: 20 to 30 inches

Reaction throughout the profile: Moderately alkaline to strongly alkaline, becoming more alkaline with depth

Other features: A Bqk horizon is above the indurated duripan in some pedons

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3

Bt horizon:
- Value—4, 5, or 6 dry, 4 or 5 moist
- Chroma—4 to 6
- Texture—gravelly clay loam, gravelly silty clay loam, gravelly clay, or gravelly silty clay
- Clay content—35 to 50 percent
- Rock fragments—15 to 35 percent when mixed, predominantly pebbles
- Exchangeable sodium—15 to 30 percent

Kodra Series

The Kodra series consists of moderately deep, well drained soils that formed mainly in alluvium derived from mixed rock sources and in loess and volcanic ash. Kodra soils are on fan piedmont remnants. Slopes are 8 to 15 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Haploxerollic Durorthids

Typical pedon: Kodra silt loam, 8 to 15 percent slopes, in an area of the Orovada-Kodra-Puett association:

A—0 to 4 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; moderately alkaline (pH 8.0); clear smooth boundary. (3 to 6 inches thick)

Bw—4 to 14 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; many fine tubular pores; 5 percent pebbles; moderately alkaline (pH 8.0); clear wavy boundary. (3 to 11 inches thick)

Bqk1—14 to 19 inches; very pale brown (10YR 8/3) loam, light yellowish brown (10YR 6/4) moist; moderate fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; many fine and few medium roots; few fine tubular pores; 10 percent pebbles; 25 percent 5- to 10-millimeter, weakly cemented durinodes; slightly effervescent; few fine irregular lime concretions; lime coatings on pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 5 inches thick)

Bqk2—19 to 30 inches; very pale brown (10YR 7/3) sandy loam, yellowish brown (10YR 5/4) moist;

massive; hard, firm, nonsticky and nonplastic; few fine and medium roots; few fine tubular pores; 10 percent pebbles; weak continuous silica cementation; strongly effervescent; strongly alkaline (pH 9.4); abrupt smooth boundary. (9 to 12 inches thick)

Bqkm—30 to 51 inches; very pale brown (10YR 7/3) strongly cemented duripan, pale brown (10YR 6/8) moist.

Type location: Lander County, Nevada; about 22 miles northeast of Battle Mountain, approximately 400 feet north and 1,400 feet west of the southeast corner of sec. 35, T. 36 N., R. 47 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 51 degrees F
Depth to Bqk horizon: 10 to 16 inches
Depth to duripan: 20 to 30 inches
Calcium carbonate equivalent: Less than 15 percent in the Bqk horizon
Control section: Clay content—12 to 18 percent
Rock fragments—0 to 15 percent

A horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 or 3
Other features—some pedons have an Ap horizon

Bw horizon:
Value—6 or 7 dry, 3 to 5 moist
Chroma—2 or 3 dry, 3 or 4 moist
Rock fragments—0 to 15 percent
Reaction—moderately alkaline or strongly alkaline
Texture—loam or sandy loam
Structure—subangular blocky or prismatic; massive in some pedons

Bqk horizon:
Value—6, 7, or 8 dry, 4 to 6 moist
Consistence—slightly hard to very hard
Reaction—moderately alkaline or strongly alkaline
Effervescence—slightly effervescent to strongly effervescent
Other features—durinodes or continuously weak silica cementation

Bqkm horizon:
Value—6 or 7 dry
Chroma—3 or 4
Reaction—moderately alkaline or strongly alkaline
Other features—some pedons contain iron mottles

2Cq horizon (where present):
Value—6 or 7 dry
Chroma—3 or 4
Texture—most pedons are stratified silt loam to sand below the duripan
Rock fragments—0 to 15 percent
Reaction—moderately alkaline or strongly alkaline
Effervescence—slightly effervescent or strongly effervescent

Koynik Series

The Koynik series consists of shallow, well drained soils that formed in residuum and colluvium derived from limestone and calcareous shales. Koynik soils are on crests and side slopes of hills and mountains. Slopes are 15 to 50 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Loamy-skeletal, carbonatic, mesic Lithic Torriorthents

Typical pedon: Koynik very gravelly very fine sandy loam, 15 to 30 percent slopes, in an area of the Koynik, steep-Koynik-Rock outcrop association. Pebbles cover 40 percent and cobbles 10 percent of the surface:

A1—0 to 3 inches; very pale brown (10YR 7/3) very gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; many very fine vesicular pores; 25 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary. (3 to 5 inches thick)

A2—3 to 6 inches; pale brown (10YR 6/3) very gravelly silt loam, brown (10YR 4/3) moist; moderate thin platy structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine vesicular and few very fine tubular pores; 40 percent pebbles; common medium lime pendants on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 6 inches thick)

Bk—6 to 8 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; moderate thin platy structure parting to moderate fine granular; slightly hard, very friable, sticky and plastic; common very fine and fine roots; many very fine and fine interstitial and tubular pores; 40 percent pebbles; common fine soft masses of lime; common medium lime pendants on undersides of and coatings on remainder of rock fragments; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (2 to 5 inches thick)

2R—8 inches; hard limestone bedrock.

Type location: Lander County, Nevada; about 30 miles

southwest of Battle Mountain in the Fish Creek Mountains; in an unsectionized area about 1,000 feet north and 3,000 feet west of the southwest corner of sec. 6, T. 28 N., R. 43 E.

Range in Characteristics

Soil moisture: Usually dry, moist for short periods in winter and early spring
Soil temperature: 47 to 52 degrees F
Depth to lithic contact: 8 to 14 inches
Control section: Clay content—15 to 25 percent; texture—very gravelly silt loam, very gravelly loam, or very gravelly very fine sandy loam; rock fragments—35 to 50 percent, predominantly pebbles
Carbonates: 40 to 60 percent calcium equivalent generally increasing with depth
Reaction throughout the profile: Moderately alkaline or strongly alkaline
Other features: Thin Cr horizon or 1 or 2 inches of highly fractured bedrock at the lithic contact in some pedons

A horizon:
Value—6 or 7 dry, 4, 5, or 6 moist
Chroma—2 to 4

Bk horizon:
Hue—10YR or 2.5Y
Value—6 to 8 dry, 4, 5, or 6 moist
Chroma—3 or 4
Structure—weak or moderate platy or subangular blocky; massive in some pedons

Koynik Variant

The Koynik Variant consists of shallow, well drained soils that formed in residuum and colluvium derived from basalt with an admixture of loess and volcanic ash. The Koynik Variant soils are on side slopes of volcanic cones. Slopes are 15 to 50 percent. Mean annual precipitation is about 6 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Lithic Torriorthents

Typical pedon: Koynik Variant very gravelly sandy loam, 15 to 50 percent slopes, rubbly, in an area of the Koynik Variant-Oxcorel-Whirlo association. Pebbles cover 50 percent, cobbles 20 percent, and stones 15 percent of the soil surface:

A—0 to 5 inches; light brownish gray (10YR 6/2) very gravelly sandy loam, brown (10YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine vesicular pores; 25 percent pebbles, 15 percent cobbles; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 6 inches thick)

C—5 to 10 inches; light brownish gray (10YR 6/2) very gravelly fine sandy loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular and vesicular pores; 30 percent pebbles, 10 percent cobbles; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (4 to 8 inches thick)

Cqk—10 to 13 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 30 percent pebbles, 10 percent cobbles; 40 to 60 percent weak and strong, 6- to 25-millimeter durinodes; pebbles and moderately thick lime and silica coatings and pendants on rock fragments; slightly effervescent; moderately alkaline (pH 8.2); abrupt irregular boundary. (0 to 4 inches thick)

2R—13 inches; hard basalt bedrock.

Type location: Lander County, Nevada; approximately 25 miles southwest of Battle Mountain, about 1,600 feet west and 800 feet south of the northeast corner of sec. 29, T. 29 N., R. 42 E.

Range in Characteristics

Soil moisture: Usually dry, moist for short periods in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to bedrock: 10 to 14 inches
Control section: Rock fragments—35 to 50 percent, mainly pebbles; texture—very gravelly fine sandy loam or very gravelly sandy loam
Calcium carbonate equivalent: Less than 15 percent

A horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—2 or 3

C horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2, 3, or 4

Kram Series

The Kram series consists of very shallow, somewhat excessively drained soils formed in residuum derived from limestone. Kram soils are on side slopes of mountains. Slopes are 15 to 50 percent. Mean annual

precipitation is about 10 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy-skeletal, carbonatic, mesic Lithic Xeric Torriorthents

Typical pedon: Kram very cobbly loam, 15 to 30 percent slopes, in an area of the Attella-Xine-Kram association. Pebbles cover 25 percent, cobbles 15 percent, and stones 2 percent of the soil surface:

A—0 to 4 inches; light brownish gray (10YR 6/2) very cobbly loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine interstitial pores; 30 percent pebbles, 20 percent cobbles; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 5 inches thick)

C—4 to 13 inches; pale brown (10YR 6/3) very gravelly very fine sandy loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure: slightly hard, very friable, nonsticky and nonplastic; common very fine and fine and few coarse roots; common very fine interstitial pores; 45 percent pebbles, 10 percent cobbles; violently effervescent; moderately alkaline (pH 8.2); abrupt irregular boundary. (3 to 10 inches thick)

R—13 inches; fractured limestone.

Type location: Lander County, Nevada; about 46 miles north of Austin, approximately 2,400 feet south and 1,100 feet west of the northeast corner sec. 19, T. 25 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry from mid-June through October

Soil temperature: 49 to 52 degrees F

Depth to bedrock: 8 to 14 inches

Control section: Clay content—8 to 18 percent; rock fragments—40 to 50 percent pebbles; 5 to 10 percent cobbles and stones when averaged

Reaction throughout the profile: Moderately alkaline or strongly alkaline. Calcium carbonate equivalent of whole soil (less than 20 millimeters) is 40 to 50 percent

A horizon:
Value—4, 5, or 6 dry, 3 or 4 moist
Chroma—2 or 3
Structure—granular or platy
Effervescence—slightly to violently effervescent

C horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 3 or 4 moist
Chroma—2, 3, or 4
Texture—very gravelly very fine sandy loam or very gravelly loam
Rock fragments—45 to 55 percent pebbles, 5 to 10 percent cobbles and stones
Structure—subangular blocky; massive in some pedons
Effervescence—strongly or violently effervescent

Kram Variant

The Kram Variant consists of shallow, well drained soils formed in residuum derived from extrusive volcanic rocks. Kram Variant soils are on crests and side slopes of hills. Slopes are 15 to 50 percent. Mean annual precipitation is about 10 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Lithic Xeric Torriorthents

Typical pedon: Kram Variant very gravelly loam, 15 to 50 percent slopes, in an area of the Old Camp-Kram Variant-Rock outcrop association. Pebbles cover 70 percent, cobbles 5 percent, and stones 2 percent of the soil surface:

A—0 to 3 inches; light brownish gray (2.5Y 6/2) very gravelly loam, dark grayish brown (2.5Y 4/2) moist; strong thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine vesicular and tubular pores; 50 percent pebbles, 5 percent cobbles; slightly effervescent; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 5 inches thick)

Ck—3 to 11 inches; pale brown (10YR 6/3) extremely gravelly loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure: soft, very friable, sticky and plastic; common very fine and fine and few medium roots; common very fine and fine tubular pores; 70 percent pebbles, 5 percent cobbles; few thin lime coatings on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (6 to 15 inches thick)

R—11 inches; hard fractured tuff bedrock.

Type location: Lander County, Nevada; approximately 21 miles south of Battle Mountain, about 500 feet north and 400 feet east of the southwest corner of sec. 14, T. 28 N., R. 41 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring

Soil temperature: 47 to 52 degrees F

Depth to bedrock: 10 to 20 inches

Control section: Clay content—18 to 27 percent; rock

fragments—50 to 80 percent when averaged, mainly pebbles
Reaction throughout the profile: Mildly alkaline to strongly alkaline, becoming more alkaline with depth
Effervescence: Slight to strong in the upper part of the profile and strong to violent in the lower part

A horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 or 3

Ck horizon:
Hue—10YR or 2.5Y

Landco Series

The Landco series consists of very deep, moderately well drained soils that formed in silty alluvium derived from mixed rock sources mostly of volcanic origin with some influence from volcanic ash. Landco soils are on alluvial flat remnants. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Coarse-silty over clayey, mixed (calcareous), mesic Typic Torriorthents

Typical pedon: Landco silt loam:

A—0 to 5 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate coarse prismatic structure parting to strong very thin and thin platy; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; many vesicular and very fine interstitial and tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (1 to 5 inches thick)

Cy1—5 to 12 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; moderate coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; strongly effervescent; common fine white (10YR 8/2) filaments or threads of gypsum crystals; strongly alkaline (pH 9.0); clear wavy boundary. (6 to 10 inches thick)

Cy2—12 to 18 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; strongly effervescent; few fine white (10YR 8/2) filaments or threads of gypsum crystals; strongly alkaline (pH 9.0); clear wavy boundary. (6 to 10 inches thick)

2Cy3—18 to 30 inches; very pale brown (10YR 7/3) silty clay, yellowish brown (10YR 5/4) moist; few fine faint yellowish brown (10YR 5/4 moist) mottles; moderate coarse and very coarse prismatic structure; very hard, friable, very sticky and very plastic; few fine roots; many very fine and fine tubular pores; common thin clay films on peds and in pores; few 5- to 15-millimeter, firm, rounded durinodes; violently effervescent; few fine white (10YR 8/2) filaments or threads of gypsum crystals; strongly alkaline (pH 8.8); gradual wavy boundary. (10 to 15 inches thick)

2Cy4—30 to 44 inches; very pale brown (10YR 7/3) silty clay, yellowish brown (10YR 5/4) moist; few fine faint brown (10YR 4/3 moist) mottles; weak coarse and very coarse prismatic structure; hard, friable, very sticky and very plastic; few very fine roots; common very fine and few fine tubular pores; few thin clay films in pores; violently effervescent; few fine white (10YR 8/2) filaments or threads of gypsum crystals; strongly alkaline (pH 8.6); gradual smooth boundary. (10 to 20 inches thick)

2C—44 to 69 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; common fine faint and distinct brown (7.5YR 4/4 moist) and dark brown (7.5YR 3/2 moist) mottles; massive; slightly hard, friable, sticky and plastic; few very fine roots; common very fine and few fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; approximately 5 miles southeast of Battle Mountain, about 1,000 feet east and 400 feet south of the northwest corner of sec. 11, T. 31 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in part for short periods from mid-October through mid-May
Soil temperature: 47 to 52 degrees F
Depth to unconformable clayey material: 15 to 25 inches
Control section: Clay content—10 to 18 percent in the upper part, 35 to 45 percent in the lower part; texture—very fine sandy loam or silt loam in the upper part, silty clay loam or silty clay in the lower part
Other features: None to common gypsum crystals in any subhorizon

A horizon:
Hue—2.5YR or 10YR
Value—6 or 7 dry
Chroma—2 or 3
Structure—platy or prismatic; massive in some pedons
Reaction—moderately alkaline or strongly alkaline
Salts—slightly to strongly salt and sodium affected

Cy horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2, 3, or 4
Structure—prismatic; massive in some pedons
Reaction—moderately alkaline to very strongly alkaline, usually becoming less alkaline with depth
Salts—strongly salt and sodium affected

2C horizon:
Consistence—slightly hard to very hard dry, very friable or friable moist, and sticky or very sticky and plastic or very plastic wet
Mottles—few or common faint or distinct relict iron mottles

Laped Series

The Laped series consists of shallow, well drained soils formed in residuum and colluvium derived from rhyolitic tuffs and andesite. Laped soils are on crests, shoulders, and side slopes of foothills, hills, and summits of plateaus. Slopes are 4 to 30 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Typic Durargids

Typical pedon: Laped gravelly loam, 8 to 15 percent slopes, in an area of the Laped-Colbar-Osoll association. Pebbles cover 30 percent of the soil surface:

A1—0 to 3 inches; light gray (10YR 7/2) gravelly loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine vesicular pores; 20 percent pebbles; moderately alkaline (pH 8.2); abrupt smooth boundary. (2 to 4 inches thick)

A2—3 to 6 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (0 to 4 inches thick)

Bt—6 to 12 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common medium roots; common very fine and fine tubular pores; few thin clay films on peds and bridging sand grains; 10 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.2); clear smooth boundary. (3 to 7 inches thick)

Btk—12 to 18 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine prismatic structure parting to strong fine angular blocky; hard, firm, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; 15 percent pebbles, 5 percent cobbles; few fine strongly effervescent lime filaments and thin lime coatings on undersides of coarse fragments; noneffervescent matrix; moderately alkaline (pH 8.3); abrupt wavy boundary. (0 to 6 inches thick)

Bqkm—18 to 23 inches; white (10YR 8/2) indurated duripan with a 2-millimeter-thick laminae cap; pale brown (10YR 6/3) moist; massive; extremely hard and extremely firm; violently effervescent; clear wavy boundary. (3 to 10 inches thick)

2R—23 inches; hard bedrock.

Type location: Lander County, Nevada; approximately 52 miles southwest of Battle Mountain, about 1,800 feet south and 400 feet west of the northeast corner of sec. 22, T. 24 N., R. 40 E.

Range in Characteristics

Soil moisture: Moist for short periods in winter and early spring, dry from May through October
Soil temperature: 47 to 51 degrees F
Solum thickness and depth to duripan: 14 to 20 inches
Depth to bedrock: 20 to 30 inches
Control section: Clay content—27 to 35 percent; rock fragments—15 to 35 percent, mainly pebbles
Other features: Thin Bqk horizon above the duripan in some pedons

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2, 3, or 4

Bt and Btk horizons:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3, 4, or 5 moist
Chroma—4 to 6
Reaction—moderately alkaline in Bt horizon, moderately alkaline or strongly alkaline in Btk horizon
SAR—2 to 10, concentration generally increases with depth
Carbonates—noneffervescent in Bt horizon, noneffervescent to slightly effervescent matrix that has secondary carbonates as filaments or coatings in Btk horizon

Layview Series

The Layview series consists of shallow, well drained soils formed in residuum and colluvium derived from andesite, rhyolite, and tuff. Layview soils are on crests and shoulders of mountains. Slopes are 4 to 15 percent. Average annual precipitation is approximately 14 inches, and mean annual temperature is 42 degrees F.

Taxonomic class: Loamy-skeletal, mixed Argic Lithic Cryoborolls

Typical pedon: Layview very gravely sandy loam, 8 to 15 percent slopes, in an area of the Hapgood-Packer-Layview association, in Lander County, south part. Pebbles cover 50 percent, cobbles 25 percent, and stones 25 percent of the soil surface:

A—0 to 3 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 35 percent pebbles; neutral (pH 7.2); abrupt smooth boundary. (3 to 8 inches thick)

Bt1—3 to 7 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; 35 percent pebbles; neutral (pH 7.2); clear wavy boundary. (3 to 10 inches thick)

Bt2—7 to 12 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; few fine and common medium roots; few very fine tubular pores; 40 percent pebbles, 10 percent cobbles; neutral (pH 7.2); abrupt irregular boundary. (0 to 8 inches thick)

2R—12 inches; fractured tuff.

Type location: Lander County, Nevada, south part; about 41 miles southwest of Austin, approximately 1,700 feet west and 1,100 feet south of northeast corner of sec. 1, R. 33 E., T. 16 N. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry in summer and fall, moist from mid-October through mid-July

Soil temperature: 43 to 47 degrees F

Average summer soil temperature: 50 to 59 degrees F

Mollic epipedon thickness: 7 to 12 inches

Depth to bedrock: 10 to 14 inches

Control section: Clay content—18 to 30 percent; rock fragments—35 to 60 percent, mainly pebbles

Reaction throughout the profile: Neutral or mildly alkaline

A horizon:
- Value—4 or 5 dry, 2 or 3 moist
- Chroma—2 or 3
- Structure—weak or moderate

Bt horizon:
- Value—4 or 5 dry, 3 or 4 moist
- Chroma—2 to 4
- Texture—very gravelly loam or very gravelly clay loam
- Clay content—22 to 35 percent
- Structure—weak or moderate subangular or angular blocky
- Rock fragments—35 to 60 percent, mainly pebbles

Linrose Series

The Linrose series consists of moderately deep, well drained soils that formed in residuum and colluvium derived from shale, chert, and quartzite. Linrose soils are on side slopes of mountains. Slopes are 30 to 75 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 42 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Haploxerolls

Typical pedon: Linrose gravelly loam, 30 to 50 percent slopes, in an area of Linrose-Cleavage-Pernty association. Pebbles cover 30 percent and cobbles 10 percent of the soil surface:

A1—0 to 2 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine vesicular and few very fine tubular pores; 15 percent pebbles, 10 percent cobbles, and 1 percent stones; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 5 inches thick)

A2—2 to 8 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak very thin platy structure; slightly hard, very friable, slightly sticky and plastic; many very fine and few fine roots; common very fine tubular pores; 25 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 11 inches thick)

Bk1—8 to 16 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and few fine roots; common very fine tubular pores; 45 percent pebbles; few thin lime coatings on undersides of pebbles; slightly

effervescent; mildly alkaline (pH 7.6); clear smooth boundary. (4 to 10 inches thick)

Bk2—16 to 26 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; 45 percent pebbles, 10 percent cobbles; few thin lime coatings on the underside of pebbles and cobbles; slightly effervescent; mildly alkaline (pH 7.8); abrupt wavy boundary. (8 to 15 inches thick)

2R—26 inches; fractured chert.

Type location: Lander County, Nevada; about 9 miles west of Battle Mountain at a site 1,000 feet north and 1,500 feet east of the approximate southwest corner of sec. 26, T. 32 N., R. 43 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from July through October

Soil temperature: 44 to 47 degrees F

Mollic epipedon: 7 to 15 inches thick

Depth to unweathered bedrock: 20 to 40 inches

Control section: Texture: Very gravelly loam and very gravelly sandy loam; rock fragments—averages 35 to 60 percent, mainly pebbles; clay content—averages 18 to 27 percent

Reaction throughout the profile: Mildly alkaline or moderately alkaline

A horizon:

Chroma—2 or 3

Bk horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry, 2 to 4 moist

Carbonates—noneffervescent or slightly effervescent matrix; fine thin lime filaments or lime coatings on undersides of rock fragments in most pedons

Locane Series

The Locane series consists of shallow, well drained soils that formed in residuum derived from shale and tuffaceous or siliceous conglomerate. Locane soils are on side slopes of mountains. Slopes are 15 to 50 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 45 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Xerollic Haplargids

Typical pedon: Locane gravelly loam, 8 to 15 percent slopes, in an area of Locane-Coztur-Punchbowl association, in Lander County, south part. Pebbles cover 40 percent and cobbles 10 percent of the soil surface:

A1—0 to 4 inches; very pale brown (10YR 7/3) gravelly loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine vesicular pores; 30 percent pebbles; neutral (pH 7.2); abrupt smooth boundary. (3 to 6 inches thick)

A2—4 to 6 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 25 percent pebbles; neutral (pH 7.2); clear smooth boundary. (0 to 3 inches thick)

Bt1—6 to 9 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and medium roots; common very fine tubular pores; many thin and few moderately thick clay films on faces of peds; 35 percent pebbles, 5 percent cobbles; neutral (pH 7.2); clear wavy boundary. (1 to 5 inches thick)

Bt2—9 to 14 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; strong medium angular blocky structure; hard, friable, very sticky and very plastic; few fine and medium roots; few very fine tubular pores; many thin and moderately thick clay films on faces of peds; 45 percent pebbles, 10 percent cobbles; neutral (pH 7.0); abrupt irregular boundary. (5 to 12 inches thick)

R—14 inches; hard, slightly fractured tuffaceous conglomerate.

Type location: Lander County, Nevada, south part; about 30 miles west of Austin, approximately 700 feet south and 2,000 feet east of the projected northwest corner of sec. 26, T. 18 N., R. 38 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in the winter and spring

Soil temperature: 44 to 47 degrees F

Depth to bedrock: 10 to 20 inches

Reaction throughout the profile: Slightly acid or neutral

A horizon:

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Structure—granular, platy, or subangular blocky

Consistence—slightly hard or hard dry

Bt horizon:
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4
Structure—weak to strong angular blocky; subangular blocky; massive in some pedons
Thickness—7 to 15 inches
Clay content—35 to 50 percent
Rock fragments—35 to 50 percent when averaged

Loncan Series

The Loncan series consists of moderately deep, well drained soils that formed in residuum and colluvium derived mainly from chert or sedimentary and volcanic rock sources. Loncan soils are on side slopes of mountains. Slopes are 4 to 50 percent. Mean annual precipitation is about 14 inches, and mean annual air temperature is 42 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Haploxerolls

Typical pedon: Loncan gravelly loam, 15 to 50 percent slopes, in an area of the Loncan-Gando-Glean association, in Lander County, south part. Pebbles cover 30 percent and cobbles 5 percent of the soil surface:

A1—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine interstitial pores; 25 percent pebbles, 5 percent cobbles; neutral (pH 6.8); clear smooth boundary. (2 to 10 inches thick)

A2—4 to 9 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate very fine granular structure; soft, very friable, sticky and plastic; common very fine roots; common very fine tubular pores; 30 percent pebbles; neutral (pH 6.8); clear smooth boundary. (4 to 10 inches thick)

A3—9 to 16 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, sticky and plastic; common medium and coarse roots; common very fine interstitial pores; 45 percent pebbles, 5 percent cobbles; neutral (pH 7.0); clear wavy boundary. (0 to 7 inches thick)

C—16 to 22 inches; pale brown (10YR 6/3) extremely gravelly loam, brown (10YR 4/3) moist; massive; soft, very friable, sticky and plastic; few fine roots; few very fine interstitial pores; 65 percent pebbles, 5 percent cobbles; neutral (pH 7.0); abrupt wavy boundary. (5 to 13 inches thick)

2R—22 inches; hard chert.

Type location: Lander County, Nevada, south part; about 55 miles south of Beowawe, approximately 2,000 feet east and 1,100 feet south of the northwest corner of sec. 5, T. 22 N., R. 48 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 42 to 47 degrees F
Mollic epipedon thickness: 10 to 17 inches
Depth to bedrock: 21 to 38 inches
Control section: Clay content—18 to 27 percent; texture—very gravelly loam, extremely cobbly loam, very gravelly sandy clay loam, or extremely gravelly loam; rock fragments—averages 50 to 70 percent pebbles and cobbles and very few stones
Other features: Some pedons have an AC horizon

A horizon:
Value—4 or 5 dry
Chroma—2 or 3
Structure—platy, subangular blocky, or granular

C horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2, 3, or 4
Rock fragments—40 to 70 percent pebbles and cobbles

Loncan Variant

The Loncan Variant consists of moderately deep, well drained soils that formed in residuum and colluvium derived from chert. Loncan Variant soils are on side slopes of mountains. Slopes are 30 to 50 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Haploxerolls

Typical pedon: Loncan Variant gravelly silt loam, 30 to 50 percent slopes, in an area of the Rock outcrop-Loncan Variant-Glean association:

A1—0 to 2 inches; brown (10YR 5/3) gravelly silt loam, dark brown (10YR 3/3) moist; weak very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 20 percent pebbles; neutral (pH 7.2); clear smooth boundary. (1 to 7 inches thick)

A2—2 to 6 inches; brown (10YR 5/3) gravelly silt loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 15 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary. (3 to 6 inches thick)

A3—6 to 12 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; common very fine tubular pores; 25 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.6); clear smooth boundary. (4 to 8 inches thick)

C1—12 to 25 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; common very fine tubular pores; 45 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.4); clear smooth boundary. (8 to 14 inches thick)

C2—25 to 32 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and nonplastic; many very fine, common fine, and few medium roots; common very fine tubular and few very fine interstitial pores; 50 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.6); abrupt wavy boundary. (4 to 10 inches thick)

R—32 inches; unweathered chert.

Type location: Lander County, Nevada; approximately 18 miles south of Battle Mountain, about 1,000 feet south and 500 feet west of the northeast corner of sec. 23, T. 29 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 43 to 47 degrees F
Mollic epipedon thickness: 10 to 20 inches
Depth to bedrock: 20 to 40 inches
Control section: Clay content—10 to 18 percent; rock fragments—45 to 65 percent when mixed, dominantly pebbles; texture—very gravelly loam or extremely gravelly sandy loam

Malpais Series

The Malpais series consists of very deep, well drained soils that formed in alluvium and colluvium derived from mixed rock sources. Malpais soils are on toe slopes of hills. Slopes are 15 to 50 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Camborthids

Typical pedon: Malpais gravelly loam, 30 to 50 percent slopes, in an area of the Trunk-Malpais-Minat association. Pebbles cover 15 percent and cobbles and stones 10 percent of the soil surface:

A—0 to 3 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak thick platy structure parting to very thin platy; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial, common very fine and fine tubular, and many very fine vesicular pores; 20 percent pebbles, 10 percent cobbles; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (3 to 6 inches thick)

Bw1—3 to 6 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate thin platy structure parting to moderate fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 25 percent pebbles, 15 percent cobbles; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary. (3 to 10 inches thick)

Bw2—6 to 15 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate fine and very fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; 40 percent pebbles, 15 percent cobbles; few fine strongly effervescent filaments and common thin lime coatings on undersides of rock fragments; noneffervescent matrix; moderately alkaline (pH 8.2); clear wavy boundary. (9 to 25 inches thick)

Bk1—15 to 25 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine pores; 30 percent pebbles, 30 percent cobbles; many strongly effervescent fine lime filaments and soft masses and common thin lime coatings on rock fragments; slightly effervescent matrix; moderately alkaline (pH 8.4); gradual wavy boundary. (8 to 30 inches thick)

Bk2—25 to 60 inches; light yellowish brown (10YR 6/4) extremely cobbly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and

fine roots; common very fine and fine tubular pores; 35 percent pebbles, 30 percent cobbles; slightly effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; about 34 miles south of Battle Mountain, approximately 500 feet east and 1,580 feet south of the northwest corner of sec. 30, T. 26 N., R. 44 E.

Range in Characteristics

Soil moisture: Usually dry, moist in part for short periods from mid-October through mid-May
Soil temperature: 47 to 52 degrees F
Depth to base of the Bw horizon: 15 to 35 inches
Depth to segregated carbonates: 6 to 25 inches
Control section: Clay content—10 to 18 percent; texture—loam, fine sandy loam, or sandy loam, modified by pebbles, cobbles, stones, or boulders; rock fragments—50 to 70 percent, mainly cobbles and stones

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Structure—weak, thin to thick platy or fine to coarse subangular blocky; massive in some pedons
Reaction—neutral to moderately alkaline
Effervescence—typically noneffervescent but slightly effervescent in some pedons subject to recharge from dust
Other features—dry value of 5 only in the uppermost 1 or 2 inches

Bw horizon:
Value—5 or 6 dry, 3, 4, or 5 moist
Chroma—2 or 3
Structure—weak to moderate, thin platy or medium or coarse prismatic; subangular blocky; massive in some pedons
Consistence—soft to hard dry and very friable or friable moist
Reaction—neutral to moderately alkaline
Effervescence—noneffervescent to slight; noneffervescent matrix in pedons with thin lime coatings on undersides of rock fragments
Other features—values of 5 dry and 3 moist reflect lithochromic colors

Bk horizon:
Hue—10YR or 2.5Y
Value—5, 6, or 7 dry, 3, 4, or 5 moist
Chroma—2, 3, or 4
Reaction—moderately alkaline or strongly alkaline
Secondary lime—few to many lime coated rock fragments; soft seams and filaments of lime
Other features—values of 5 dry and 3 moist reflect lithochromic colors

McConnel Series

The McConnel series consists of very deep, somewhat excessively drained soils that formed in alluvium derived from mixed rock sources with a component of loess and volcanic ash over lacustrine beach sediments or gravelly alluvium. McConnel soils are on inset fans and offshore bars. Slopes are 0 to 4 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 50 degrees F.

Taxonomic class: Sandy-skeletal, mixed, mesic Xerollic Camborthids

Typical pedon: McConnel loam, 0 to 4 percent slopes, in an area of the Tulase-Bubus-McConnel association. Pebbles cover 20 percent of the soil surface:

A1—0 to 2 inches; gray (10YR 6/1) loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure parting to weak very fine granular; soft, very friable, nonsticky and nonplastic; many fine roots and common medium roots; common very fine tubular pores; 10 percent pebbles; neutral (pH 7.2); abrupt smooth boundary. (1 to 5 inches thick)

A2—2 to 6 inches; light brownish gray (10YR 6/2) sandy loam, dark grayish brown (10YR 4/2) moist; weak thick platy structure parting to weak very fine granular; slightly hard, friable, slightly sticky and nonplastic; many fine and common medium roots; common very fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (4 to 10 inches thick)

Bw—6 to 12 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; common very fine tubular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary. (5 to 8 inches thick)

2Bk1—12 to 18 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and medium roots; few very fine tubular pores; 55 percent pebbles; very thin lime coatings on undersides of pebbles; slightly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary. (4 to 7 inches thick)

3Bk2—18 to 28 inches; light brownish gray (10YR 6/2) extremely gravelly loamy coarse sand, grayish brown (10YR 5/2) moist; single grained; loose, nonsticky and nonplastic; common fine and medium roots; many fine interstitial pores; 65 percent pebbles; thin lime coatings on undersides of pebbles; strongly effervescent; moderately alkaline

(pH 8.4); gradual wavy boundary. (4 to 15 inches thick)

3Bk3—28 to 60 inches; pale brown (10YR 6/3) extremely gravelly coarse sand, brown (10YR 4/3) moist; single grained; loose, nonsticky and nonplastic; few fine and medium roots; many fine interstitial pores; 70 percent pebbles; few thin lime coatings on the undersides of pebbles; strongly effervescent; very strongly alkaline (pH 8.8).

Type location: Lander County, Nevada; about 38 miles southeast of Battle Mountain, approximately 1,500 feet north of the southeast corner of sec. 30, T. 26 N., R. 48 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 50 to 54 degrees F
Depth to 2Bk horizon: 10 to 20 inches
Control section: Clay content—averages up to 5 percent; rock fragments—averages 50 to 80 percent, mainly pebbles
Upper part of control section: Texture—stratified very fine sandy loam to extremely gravelly sandy loam or sandy loam; rock fragments—up to 70 percent in any one stratum, mainly pebbles
Lower part of control section: Texture—stratified very gravelly loamy sand to extremely gravelly coarse sand; rock fragments—60 to 85 percent in any one stratum, mostly pebbles

A horizon:
- Hue—10YR or 2.5Y
- Value—5 or 6 dry, 3 or 4 moist (5 dry and 3 moist only in the uppermost 3 inches)
- Chroma—1 to 3
- Structure—weak or moderate, thin to thick platy or fine to coarse granular; massive in some pedons
- Reaction—neutral to moderately alkaline

Bw horizon:
- Hue—10YR or 2.5Y
- Value—5 to 7 dry, 3 to 5 moist
- Chroma—2 to 4 (1 if dark sand grains are present)
- Texture—loam, sandy loam, fine sandy loam
- Structure—very fine to medium granular or subangular blocky; massive in some pedons
- Reaction—neutral to moderately alkaline

2Bk and 3Bk horizons:
- Hue—10YR or 2.5Y
- Value—5 to 7 dry, 3 to 5 moist
- Chroma—2 to 4 (1 if dark sand grains are present)
- Reaction—moderately alkaline to very strongly alkaline

McVegas Series

The McVegas series consists of shallow, well drained soils that formed in residuum derived from metavolcanic and volcanic rocks. McVegas soils are on hills. Slopes are 15 to 30 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic, shallow Haplic Nadurargids

Typical pedon: McVegas very cobbly loam, 15 to 30 percent slopes, in an area of the McVegas-Stingdorn-Colbar association. Pebbles cover 10 percent and cobbles 30 percent of the soil surface:

A1—0 to 2 inches; light brownish gray (10YR 6/2) very cobbly loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few medium roots; many fine vesicular pores; 30 percent cobbles, 20 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary. (1 to 3 inches thick)

A2—2 to 5 inches; light brownish gray (10YR 6/2) cobbly loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; few medium roots; many very fine tubular pores; 15 percent pebbles, 15 percent cobbles; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 5 inches thick)

Btn—5 to 10 inches; brown (10YR 5/3) very cobbly silty clay, dark brown (10YR 3/3; 4/3 crushed) moist; weak medium prismatic structure parting to strong fine and medium angular blocky; very hard, very firm, very sticky and very plastic; few medium roots; common fine tubular pores; thick continuous clay films on peds; 25 percent pebbles, 15 percent cobbles; strongly alkaline (pH 8.8); clear wavy boundary. (3 to 7 inches thick)

Btnk—10 to 19 inches; light yellowish brown (10YR 6/4) very cobbly silty clay, dark yellowish brown (10YR 3/4; 4/4 crushed) moist; moderate fine angular blocky structure; very hard, very firm, very sticky and very plastic; few medium roots; common very fine tubular pores; thick continuous clay films on peds; 25 percent pebbles, 20 percent cobbles; common medium lime filaments and threads; strongly effervescent; strongly alkaline (pH 9.0); abrupt irregular boundary. (4 to 10 inches thick)

Bqkm—19 to 22 inches; very pale brown (10YR 7/4) strongly cemented duripan capping bedrock and in cracks in the bedrock with some discontinuous laminar indurated deposits; 50 percent pebbles, 30 percent cobbles essentially in place; strongly

effervescent; abrupt smooth boundary. (1 to 19 inches thick)

R—22 inches; hard volcanic bedrock.

Type location: Lander County, Nevada; approximately 30 miles northwest of Austin, about 1,200 feet south and 1,100 feet west of the approximate northeast corner of sec. 30, T. 24 N., R. 42 E.

Range in Characteristics

Soil moisture: Usually dry, moist in part for short periods from October through May

Soil temperature: 47 to 52 degrees F

Depth to strongly cemented duripan: 14 to 20 inches

Depth to bedrock: 15 to 35 inches

Control section: Clay content—35 to 45 percent; rock fragments—35 to 60 percent, mainly cobbles

Reaction throughout the profile: Moderately alkaline to very strongly alkaline, usually becoming more alkaline with depth

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—weak to moderate, thin or medium platy

Btn horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—3 or 4
- Texture—very cobbly silty clay, very cobbly clay, very cobbly silty clay loam, or very cobbly clay loam
- Structure—weak to strong, fine to medium prismatic
- Consistence—hard to very hard dry, friable to very firm moist

Btnk horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—4 or 6
- Texture—very cobbly silty clay, very cobbly clay, very cobbly silty clay loam, or very cobbly clay loam
- Structure—moderate or strong, fine or medium angular blocky or prismatic structure
- Consistence—hard or very hard, friable to very firm

Midraw Series

The Midraw series consists of shallow, well drained soils that formed in some loess and volcanic ash but mainly in colluvium and residuum derived from rhyolite, andesite, or rhyolitic tuff. Midraw soils are on crests and side slopes of hills and foothills. Slopes are 15 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Clayey, montmorillonitic, mesic, shallow Xerollic Durargids

Typical pedon: Midraw very cobbly loam, 15 to 30 percent slopes, in an area of the Colbar-Midraw association. Pebbles cover 10 percent, cobbles 30 percent, and stones 10 percent of the soil surface:

A1—0 to 4 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, friable, sticky and slightly plastic; common very fine and fine and few medium roots; many very fine and fine vesicular pores; 15 percent pebbles, 20 percent cobbles, 5 percent stones; mildly alkaline (pH 7.6); clear wavy boundary. (2 to 6 inches thick)

A2—4 to 6 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine interstitial pores; 10 percent pebbles; mildly alkaline (pH 7.4); clear wavy boundary. (0 to 4 inches thick)

Bt1—6 to 9 inches; pale brown (10YR 6/3) gravelly clay loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots; common very fine and fine and few medium tubular pores; common thin clay films on faces of peds; 10 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.8); gradual wavy boundary. (3 to 5 inches thick)

Bt2—9 to 16 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; hard, friable, very sticky and very plastic; common very fine, fine, and coarse roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds; 20 percent 5- to 20-millimeter, weak and moderate durinodes; 10 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.0); clear irregular boundary. (6 to 12 inches thick)

Bqkm—16 to 31 inches; very pale brown (10YR 7/3) indurated duripan, yellowish brown (10YR 5/4) moist; extremely hard, extremely firm; common fine roots forming mat over laminar cap; violently effervescent; moderately alkaline (pH 8.4); abrupt irregular boundary. (4 to 15 inches thick)

2R—31 inches; fractured andesite.

Type location: Lander County, Nevada; about 55 miles southwest of Battle Mountain, approximately 400 feet west and 1,600 feet north of the southeast corner of sec. 17, T. 24 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Solum thickness: 14 to 20 inches
Depth to duripan: 14 to 20 inches
Depth to bedrock: 22 to 35 inches
Control section: Clay content—35 to 45 percent; rock fragments—15 to 30 percent, mainly pebbles

A horizon:
Value: 3, 4, or 5 moist
Chroma—2 or 3
Structure—weak or moderate, thin to thick platy or fine to coarse subangular blocky
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4
Texture—gravelly clay loam or gravelly clay
Rock fragments—15 to 30 percent, mainly pebbles
Reaction—neutral to moderately alkaline
Other features—some pedons have durinodes or pan fragments in the Bt2 horizon

Bqkm horizon:
Hue—7.5YR or 10YR
Value—5 to 7 dry, 4 or 5 moist
Chroma—3 or 4

Millerlux Series

The Millerlux series consists of shallow, well drained soils that formed in some loess but mainly in residuum and colluvium of basalt and tuff. Millerlux soils are on the plateaus. Slopes are 8 to 30 percent. Mean annual precipitation is about 10 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Clayey, montmorillonitic, frigid Lithic Xerollic Haplargids

Typical pedon: Millerlux very cobbly loam, 8 to 15 percent slopes, in an area of Susie Creek-Millerlux association. Cobbles cover 40 percent of the soil surface:

A1—0 to 5 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; slightly hard, friable, sticky and plastic; many fine and very fine roots; many fine and very fine tubular pores; 15 percent cobbles, 20 percent pebbles; neutral (pH 7.0); clear smooth boundary. (0 to 6 inches thick)
A2—5 to 10 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; many fine and very fine roots; many fine and very fine tubular pores; 10 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (0 to 4 inches thick)
Bt—10 to 15 inches; brown (7.5YR 5/4) clay, dark brown (7.5YR 4/4) moist; strong fine prismatic structure; hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine tubular pores; 10 percent pebbles, 2 percent cobbles; common thin clay films on faces of peds; moderately alkaline (pH 8.0); abrupt smooth boundary. (3 to 13 inches thick)
R—15 inches; basalt.

Type location: Lander County Nevada; about 10 miles northeast of Battle Mountain, approximately 2,000 feet north and 2,500 feet west of the southeast corner of sec. 2, T. 33 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry from late June through mid-October, moist in winter and spring
Soil temperature: 43 to 47 degrees F
Solum thickness and depth to bedrock: 12 to 20 inches

A horizon:
Value—5, 6, or 7 dry, 3 or 4 moist
Chroma—2 or 3
Reaction—usually neutral or mildly alkaline, but moderately alkaline in some pedons

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3, 4, or 5 moist
Chroma—3, 4, or 6, but may be 2 dry in upper part
Clay content—40 to 60 percent
Structure—fine to coarse prismatic or angular blocky
Rock fragments—less than 15 percent, mainly pebbles
Reaction—neutral to moderately alkaline

This soil is a taxadjunct to the Millerlux series because of the absence of carbonates in the lower part of the Bt horizon. The Millerlux series has carbonates in the lower part of the Btk horizon. Use and management are the same.

Minat Series

The Minat series consists of very deep, well drained soils formed in some volcanic ash but mainly in colluvium of chert, shale, and mixed volcanic rocks. Minat soils are on side slopes of hills and mountains.

Slopes are 15 to 75 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Xerollic Camborthids

Typical pedon: Minat very cobbly sandy loam, 30 to 50 percent slopes, in an area of the Minat-Bojo-Stingdorn association. Pebbles cover 45 percent and cobbles 25 percent of the soil surface:

A1—0 to 3 inches; pale brown (10YR 6/3) very cobbly sandy loam, brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common fine tubular pores; 30 percent pebbles, 20 percent cobbles; moderately alkaline (pH 7.8); gradual smooth boundary. (3 to 6 inches thick)

A2—3 to 9 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common fine tubular pores; 35 percent pebbles; moderately alkaline (pH 8.0); gradual wavy boundary. (0 to 6 inches thick)

Bw1—9 to 19 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common fine tubular pores; 50 percent pebbles; moderately alkaline (pH 8.0); gradual wavy boundary. (6 to 12 inches thick)

Bw2—19 to 27 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and few fine and medium roots; few fine tubular pores; 40 percent pebbles; effervescent in spots; lime coatings on undersides of pebbles; moderately alkaline (pH 8.4); gradual wavy boundary. (6 to 12 inches thick)

Bqk1—27 to 44 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, sticky and plastic; common very fine and few fine and medium roots; 50 percent pebbles; 15 percent weakly cemented durinodes; lime coatings on pebbles; strongly effervescent; strongly alkaline (pH 8.6); gradual wavy boundary. (7 to 19 inches thick)

Bqk2—44 to 60 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; many very fine roots; 50 percent pebbles; 15 percent weakly cemented durinodes; common medium soft lime masses and coatings on pebbles; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; about 32 miles south of Battle Mountain in an unsectionized area, approximately 2,600 feet south and 1,500 feet east of the northwest corner of sec. 6, T. 24 N., R. 42 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 50 degrees F
Thickness of A and Bw horizons: 20 to 30 inches
Depth to carbonates: 18 to 27 inches
Control section: Clay content—15 to 27 percent; rock fragments—35 to 60 percent, predominantly pebbles

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Reaction—Mildly alkaline or moderately alkaline
Other features—some pedons have carbonate recharge in the A1 horizon

Bw horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4
Reaction—mildly alkaline or moderately alkaline

Bqk horizon:
Value—6 or 7 dry, 4 to 6 moist
Chroma—3 or 4
Cementation—up to 15 percent weakly cemented durinodes
Reaction—moderately alkaline or strongly alkaline

Misad Series

The Misad series consists of very deep, well drained soils that formed in some loess high in content of volcanic ash but mainly in alluvium or lake shore sediments of mixed rock sources. Misad soils are on alluvial fans, fan skirts, inset fans, and offshore bars. Slopes are 0 to 8 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Durorthidic Torriorthents

Typical pedon: Misad gravelly sandy loam, strongly saline-sodic:

A1—0 to 3 inches; pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 3/3) moist;

moderate thin and medium platy structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine roots; many very fine vesicular and tubular pores; 20 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (2 to 5 inches thick)

A2—3 to 7 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and common fine roots; many very fine vesicular and tubular pores; 30 percent pebbles; slightly effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (4 to 8 inches thick)

Bq—7 to 14 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; common fine distinct brown (7.5YR 5/4 and 4/4 moist) relict mottles; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine and few fine and medium roots; many very fine tubular pores; 10 percent pebbles; 15 percent 5- to 15-millimeter, weakly cemented durinodes; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 15 inches thick)

Bqk1—14 to 26 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 4/3) moist; common fine distinct brown (7.5YR 5/4 and 4/2 moist) relict mottles; massive; slightly hard, very friable, nonsticky and slightly plastic; very few very fine and fine roots; common very fine tubular pores; 25 percent pebbles; 35 percent 5- to 30-millimeter, weakly and strongly cemented durinodes; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (7 to 24 inches thick)

Bqk2—26 to 31 inches; pale brown (10YR 6/3) very gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; few fine distinct brown (7.5YR 5/4 and 4/2 moist) relict mottles; massive; slightly hard, very friable, nonsticky and slightly plastic; very few very fine roots; many very fine tubular pores; 45 percent pebbles; 10 percent 5- to 15-millimeter, weakly cemented durinodes; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (4 to 22 inches thick)

2C—31 to 43 inches; pale brown (10YR 6/3) very gravelly loamy coarse sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; very few very fine roots; many very fine interstitial and tubular pores; 55 percent pebbles; strongly alkaline (pH 9.0); clear wavy boundary. (0 to 16 inches thick)

2Cq—43 to 60 inches; variegated extremely gravelly coarse sand; single grained; loose, nonsticky and nonplastic; very few fine roots; 75 percent pebbles; few horizontal, 2- to 3-inch-thick, discontinuous, strongly silica-cemented lenses; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; approximately 2.6 miles southeast of Battle Mountain, about 2,500 feet east and 1,000 feet south of the approximate northwest corner of sec. 27, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and early spring

Soil temperature: 47 to 51 degrees F

Depth to Bqk horizon with more than 20 percent durinodes: 8 to 25 inches

Depth to unconformable 2C horizon: 20 to 35 inches

Control section: Texture—sandy loam, fine sandy loam, very fine sandy loam, loamy coarse sand, and loamy sand; rock fragments—35 to 50 percent, mainly pebbles

Reaction throughout the profile: Normally calcareous, commonly noneffervescent in the surface or in the lower part of the profile

Relict iron mottles: Common in any horizon below a depth of 7 inches

A horizon:
- Hue—2.5Y or 10YR
- Value—6 or 7 dry, 3, 4, or 5 moist
- Chroma—2 or 3

Bq and Bqk horizons:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—2, 3, or 4
- Durinodes—10 to 40 percent, weakly to strongly cemented

2C horizon:
- Texture—loamy sand, sand, loamy coarse sand
- Rock fragments—50 to 70 percent, mainly pebbles
- Cementation—commonly has discontinuous, weakly or strongly silica-cemented lenses between pebbles in any layer
- Effervescence—noneffervescent to strongly effervescent

Needle Peak Series

The Needle Peak series consists of very deep, somewhat poorly drained soils that formed in some loess and volcanic ash but mainly in alluvium derived from mixed rock sources. Needle Peak soils are on inset fans and flood plains. Slopes are 0 to 2 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Aquic Torriorthents

Typical pedon: Needle Peak silt loam, occasionally flooded, 0 to 2 percent slopes, in an area of Bubus-Needle Peak-Yipor association:

A1—0 to 4 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; strong thin and medium platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (3 to 9 inches thick)

A2—4 to 9 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine and medium roots; many very fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 9 inches thick)

Ck1—9 to 16 inches; light gray (10YR 7/2) silt loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and few fine and medium roots; many very fine tubular pores; 15 percent weakly cemented durinodes; violently effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (7 to 20 inches thick)

Ck2—16 to 27 inches; light gray (10YR 7/2) silt loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and few fine and medium roots; many very fine tubular pores; 15 percent weakly cemented durinodes; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (10 to 24 inches thick)

Ck3—27 to 49 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; common fine faint dark yellowish brown (10YR 4/4 moist) mottles; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine and coarse roots; many very fine tubular pores; 10 percent weakly cemented durinodes; few fine soft lime masses; violently effervescent; strongly alkaline (pH 8.6); gradual smooth boundary. (0 to 24 inches thick)

2Ck4—49 to 60 inches; light gray (10YR 7/2) sandy loam, grayish brown (10YR 5/2) moist; few fine faint dark yellowish brown (10YR 4/4) moist mottles; massive; slightly hard, very friable, slightly sticky and nonplastic; many very fine roots; many very fine tubular pores; 10 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; about 20 miles southeast of Battle Mountain, approximately 1,500 feet south of the northeast corner of sec. 19, T. 30 N., R. 43 E.

Range in Characteristics

Soil moisture: Seasonal high water table at a depth of 4 to 6 feet

Soil temperature: 47 to 52 degrees F

Depth to lime: Less than 10 inches

Control section: Clay content—20 to 35 percent; texture—silt loam or silty clay loam

Other features: Mottling below a depth of 20 inches in most pedons

A horizon:
- Hue—10YR or 2.5Y
- Value—3 or 4 moist
- Chroma—2 or 3
- Structure—platy or subangular blocky
- Reaction—mildly alkaline to strongly alkaline
- Other features—slightly effervescent in some pedons

Ck horizon:
- Hue—10YR or 2.5Y
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—2 or 3
- Structure—angular blocky or subangular blocky; or massive in some pedons
- Reaction—moderately alkaline to very strongly alkaline

Newpass Series

The Newpass series consists of moderately deep, well drained soils that formed in some loess but mainly in residuum of volcanic and metavolcanic rocks. Newpass soils are on side slopes of mountains. Slopes are 30 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Haploxerollic Nadurargids

Typical pedon: Newpass loam, 30 to 50 percent slopes, in an area of the Burrita-Alley-Newpass association:

A1—0 to 2 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common fine and very fine roots; many fine and very fine vesicular pores; 10 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (3 to 6 inches thick)

A2—2 to 5 inches; pale brown (10YR 6/3) loam, brown

(10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine roots; many very fine and common fine tubular pores; 10 percent pebbles; moderately alkaline (pH 8.0); abrupt smooth boundary. (0 to 3 inches thick)

Btn—5 to 17 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/4) moist; moderate fine prismatic structure; hard, firm, very sticky and very plastic; common fine and very fine roots; common very fine tubular pores; 10 percent pebbles; moderately thick clay films on faces of peds; very strongly alkaline (pH 9.6); clear wavy boundary. (3 to 12 inches thick)

Btk—17 to 24 inches; yellowish brown (10YR 5/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine and few fine tubular pores; 25 percent pebbles, 5 percent cobbles; moderately thick clay films on faces of peds; common medium soft masses of lime, lime coating all surfaces of rock fragments; strongly effervescent; very strongly alkaline (pH 9.4); abrupt wavy boundary. (2 to 7 inches thick)

Bqkm—24 to 34 inches; white (10YR 8/2) strongly cemented duripan, very pale brown (10YR 8/3) moist; massive; very hard, very firm; few very fine roots in cracks; few very fine tubular pores; 15 percent pebbles; lime coatings on rock fragments; violently effervescent; very strongly alkaline (pH 9.6); abrupt wavy boundary. (0.5 inch to 12 inches thick)

R—34 inches; andesite.

Type location: Lander County, Nevada; approximately 6 miles northeast of Battle Mountain, about 1,700 feet east and 1,800 feet north of the southwest corner of sec. 14, T. 33 N., R. 45 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from mid-June through October

Soil temperature: 47 to 52 degrees F

Depth to duripan: 20 to 29 inches

Depth to bedrock: 21 to 36 inches

Control section: Clay content—45 to 60 percent; rock fragments—averages 15 to 35 percent, less than 15 percent (mainly pebbles) in the upper part and 25 to 50 percent (mainly pebbles and cobbles) in the lower part

A horizon:
- Value—6 or 7 dry, 3, 4, or 5 moist
- Chroma—2 or 3
- Structure—platy or subangular blocky
- Reaction—mildly alkaline or moderately alkaline

Btn and Btk horizons:
- Hue—10YR or 7.5YR
- Value—4 or 5 dry (may be 6 in the upper part), 3 or 4 moist
- Chroma—3, 4, or 6
- Reaction—moderately alkaline to very strongly alkaline, commonly becoming more alkaline with depth
- Exchangeable sodium—15 to 30 percent in Bn horizon; 5 to 15 percent in Bk horizon

Ninemile Series

The Ninemile series consists of shallow, well drained soils that formed in some volcanic ash but mainly in residuum and colluvium derived from andesite, basalt, and tuffs. Ninemile soils are on side slopes of stable mountains. Slopes are 15 to 30 percent. Mean annual precipitation is about 14 inches, and mean annual temperature is about 43 degrees F.

Taxonomic class: Clayey, montmorillonitic, frigid Lithic Argixerolls

Typical pedon: Ninemile extremely cobbly loam, 15 to 30 percent slopes, in an area of the Robson-Ninemile-Ravenswood association, in Lander County, south part. Pebbles cover 25 percent and cobbles and stones 50 percent of the soil surface:

A1—0 to 4 inches; dark brown (10YR 4/3) extremely cobbly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine interstitial pores; 20 percent pebbles, 40 percent cobbles and stones; neutral (pH 7.0); abrupt wavy boundary. (1 to 7 inches thick)

A2—4 to 7 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate very fine and fine granular structure; slightly hard, friable, sticky and plastic; common fine and few very fine and medium roots; common fine interstitial pores; 10 percent pebbles; neutral (pH 7.0); abrupt wavy boundary. (0 to 6 inches thick)

Bt1—7 to 14 inches; dark brown (10YR 4/3) clay, dark brown (10YR 3/3) moist; strong fine and medium prismastic structure; hard, firm, very sticky and very plastic; common medium and few fine exped roots along faces of peds; common fine and few very fine tubular pores; common moderately thick clay films

lining pores and on faces of peds; 10 percent cobbles; neutral (pH 6.8); clear wavy boundary. (3 to 9 inches thick)

Bt2—14 to 19 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, very sticky and very plastic; few fine roots; few very fine tubular pores; many thick pressure faces; 10 percent cobbles; neutral (pH 6.8); abrupt wavy boundary. (4 to 7 inches thick)

R—19 inches; fractured andesite.

Type location: Lander County, Nevada, south part; about 16 miles northeast of Austin, approximately 1,200 feet east and 1,300 feet north of the southwest corner of sec. 28, T. 19 N., R. 46 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 44 to 47 degrees F
Mollic epipedon: 6 to 15 inches thick, commonly includes part or all of the argillic horizon
Depth to bedrock: 10 to 20 inches
Control section: Clay content—averages 40 to 60 percent; reaction—slightly acid to mildly alkaline

A horizon:
- Value—3 to 5 dry, 2 or 3 moist
- Chroma—1 to 3
- Structure—thin to thick platy or granular
- Consistence—soft or slightly hard dry, nonsticky to slightly sticky and nonplastic to plastic wet
- Reaction—slightly acid to mildly alkaline
- Other features—uppermost 1 or 2 inches of some pedons has color value of 6 and is massive

Bt horizon:
- Hue—5YR, 7.5YR, or 10YR
- Value—3 to 6 dry, 3 or 4 moist
- Chroma—2, 3, or 4
- Clay content—40 to 60 percent
- Texture—clay or gravelly clay
- Rock fragments—0 to 30 percent pebbles or cobbles
- Structure—moderate or strong subangular blocky, angular blocky, or prismatic; massive in the Bt2 horizon of some pedons

R horizon:
- Other features—in some pedons where the depth to bedrock is less than 15 inches, the uppermost 1 to 3 inches of bedrock is weathered

Norfork Series

The Norfork series consists of shallow, well drained soils that formed in some mixed loess and volcanic ash but mainly in residuum and colluvium derived from basalt, andesite, rhyolite, and metamorphic rocks. Norfork soils are on side slopes of hills. Slopes are 15 to 30 percent. Mean annual precipitation is about 11 inches, and mean annual temperature is 46 degrees F.

Taxonomic class: Clayey, montmorillonitic, mesic, shallow Xerollic Durargids

Typical pedon: Norfork gravelly loam, 15 to 30 percent slopes, in an area of the Jung-Norfork-Buffaran association. Pebbles cover 25 percent and cobbles 5 percent of the soil surface:

A—0 to 3 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine interstitial pores; 20 percent pebbles, 10 percent cobbles; neutral (pH 7.2); abrupt smooth boundary. (2 to 4 inches thick)

Bt1—3 to 7 inches; brown (10YR 5/3) gravelly silty clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure parting to moderate fine granular; slightly hard, friable, sticky and plastic; many very fine and fine and common medium roots; many very fine and fine interstitial pores; many thin clay films on faces of peds and lining pores; 20 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary. (2 to 5 inches thick)

Bt2—7 to 14 inches; yellowish brown (10YR 5/4) gravelly silty clay, dark yellowish brown (10YR 4/4) moist; strong fine subangular blocky structure; hard, firm, very sticky and very plastic; common thin clay films lining pores and common thick clay films on faces of peds; 15 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.6); clear smooth boundary. (3 to 7 inches thick)

Bqk—14 to 17 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few fine roots; few fine tubular pores; common thick silica pendants on undersides of rock fragments; 20 percent pebbles, 5 percent cobbles; many medium seams of secondary carbonates; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary. (0 to 4 inches thick)

Bqkm—17 to 22 inches; very pale brown (10YR 7/3) indurated duripan, light yellowish brown (10YR 6/4) moist; massive; extremely hard, extremely firm; 2-

to 6-millimeter-thick laminar cap and thin silica horizontal bands at intervals throughout horizon; violently effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary. (5 to 20 inches thick)

R—22 inches; quartzite.

Type location: Lander County, Nevada; about 25 miles south of Battle Mountain, approximately 2,000 feet west and 2,500 feet north of the southeast corner of sec. 12, T. 28 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to base of Bt horizon: 7 to 14 inches
Depth to indurated duripan: 10 to 20 inches
Depth to bedrock: 21 to 40 inches
Control section: Clay content—35 to 45 percent; rock fragments—averages 20 to 30 percent, mainly pebbles with as much as 15 percent cobbles

A horizon:
- Value—5 or 6 dry
- Chroma—2 or 3
- Structure—platy or granular
- Consistence—soft or slightly hard, very friable or friable, nonsticky to sticky and nonplastic to plastic
- Reaction—neutral or mildly alkaline

Bt horizon:
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—gravelly silty clay, gravelly silty clay loam, or cobbly silty clay loam
- Reaction—neutral to moderately alkaline

Bqk horizon (only in some pedons):
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—gravelly loam, gravelly silt loam, or gravelly silty clay loam
- Rock fragments—20 to 35 percent and as much as 5 percent cobbles
- Reaction—Mildly alkaline or moderately alkaline

Ocala Series

The Ocala series consists of very deep, somewhat poorly drained soils that formed in some volcanic ash but mainly in silty alluvium derived from mixed rock sources. Ocala soils are on flood plains, lake plains, and alluvial flats. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 50 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Aeric Halaquepts

Typical pedon: Ocala silt clay loam, occasionally flooded, in an area of the Batan-Ocala-Ocala, rarely flooded, association:

A1—0 to 2 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 5/3) moist; moderate medium platy structure; slightly hard, friable, sticky and plastic; few fine roots; common fine vesicular pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary. (0 to 6 inches thick)

A2—2 to 6 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; moderate fine granular structure; slightly hard, friable, sticky and plastic; common fine and medium roots; few fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary. (0 to 6 inches thick)

C—6 to 13 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; few fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); abrupt wavy boundary. (4 to 18 inches thick)

Cqk1—13 to 18 inches; white (10YR 8/2) silt loam, pale brown (10YR 6/3) moist; few medium faint yellowish brown (10YR 5/4 moist) mottles; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; few fine tubular pores; 15 percent weakly cemented durinodes; strongly effervescent; strongly alkaline (pH 9.0); abrupt broken boundary. (3 to 8 inches thick)

Cqk2—18 to 26 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; common medium faint dark grayish brown (10YR 4/2 moist) mottles; massive; hard, firm, brittle, slightly sticky and slightly plastic; few fine roots; few fine tubular pores; weak continuous silica cementation; strongly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary. (3 to 14 inches thick)

Cqk3—26 to 36 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; common medium faint pale brown (10YR 6/3 moist) and grayish brown (10YR 5/2 moist) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; weak fine tubular pores; 30 percent weak discontinuous cementation; strongly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary. (0 to 15 inches thick)

Cqk4—36 to 60 inches; white (10YR 8/2) silt loam, pale brown (10YR 6/3) moist; few medium faint yellowish brown (10YR 5/4 moist) mottles; massive; very

hard, very firm, brittle, slightly sticky and slightly plastic; few fine tubular pores; weak continuous silica cementation; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; about 26 miles southeast of Battle Mountain, approximately 1,000 feet north and 500 feet east of the southwest corner of sec. 19, T. 28 N., R. 48 E.

Range in Characteristics

Soil moisture: Usually saturated within a depth of 40 inches for 1 month or more in most years
Soil temperature: 50 to 54 degrees F
Depth to weakly cemented horizon: 13 to 30 inches
Control section: Clay content—18 to 35 percent; texture—silty clay loam or silt loam that has thin strata of clay loam, loam, or silty clay in some pedons
Cementation: More than one weakly cemented horizon in some pedons; horizons that are 20 to 70 percent durinodes in a friable matrix above the weakly cemented horizons in some pedons
Reaction throughout the profile: Strongly or very strongly alkaline
Salt and sodium: Normally strongly salt and sodium affected within the uppermost 10 inches; flood irrigated areas affected only below this depth
Segregated lime: Lime concretions normally below a depth of 35 inches, not in some pedons
Iron mottles: Below a depth of 12 inches
Other features: Generally noncalcareous and mildly alkaline strata or lenses of volcanic ash as much as 4 inches thick in most pedons, especially below a depth of 30 inches

A horizon:
Hue—10YR to 5Y
Value—6 to 8 dry, 4 to 7 moist
Chroma—1 to 3
Structure—granular or platy

C and Cqk horizons:
Hue—10YR to 5Y
Value—6 to 8 dry, 4 to 7 moist
Chroma—1 to 3
Structure—platy; massive in some pedons

Old Camp Series

The Old Camp series consists of shallow, well drained soils that formed in some volcanic ash but mainly in residuum and colluvium weathered from tuffs, basalt, rhyolite, and andesite. Old Camp soils are on hills and mountains. Slopes are 4 to 75 percent. Mean annual precipitation is about 10 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids

Typical pedon: Old Camp very gravelly loam, 15 to 30 percent slopes, in an area of the Old Camp-Minat-Osoll association. Pebbles cover 50 percent of the soil surface:

A—0 to 2 inches; brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; 35 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary. (1 to 7 inches thick)
Bt—2 to 5 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; common very fine and fine interstitial pores; 45 percent pebbles, 10 percent cobbles; few moderately thick clay films on faces of peds; mildly alkaline (pH 7.8); clear smooth boundary. (0 to 7 inches thick)
Btk—5 to 11 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, friable, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; 35 percent pebbles and 5 percent cobbles; common moderately thick clay films on faces of peds and lining pores; few very thin strongly effervescent lime coatings underneath bedrock fragments; moderately alkaline (pH 8.0); abrupt irregular boundary. (4 to 13 inches thick)
R—11 inches; andesite; lime coatings in fractures.

Type location: Lander County, Nevada; approximately 14 miles southwest of Battle Mountain, about 1,050 feet south of the northeast corner of sec. 22, T. 31 N., R. 42 E.

Range in Characteristics

Soil moisture: Usually dry, moist from November through May
Soil temperature: 47 to 52 degrees F
Depth to bedrock: 10 to 20 inches
Control section: Rock fragments—50 to 75 percent, dominantly cobbles and stones; 35 to 50 percent rock fragments in the upper part in some pedons

A horizon:
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 or 3

Structure—weak granular; platy; massive in some pedons
Reaction—neutral or mildly alkaline

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 7 dry, 3 to 5 moist
Chroma—2 to 4
Texture—clay loam or sandy clay loam, with subhorizons in some pedons of loam, modified by an average of 50 to 75 percent rock fragments, mainly cobbles or stones
Clay content—27 to 35 percent
Structure—weak or moderate, coarse to fine angular or subangular blocky
Reaction—neutral or mildly alkaline in the upper part, ranges to strongly alkaline in the calcareous lower part
Other features—few to continuous lime coatings on rock fragments or bedrock

This pedon is a taxadjunct to the Old Camp series because it has mainly pebbles in the Bt horizon. In the Old Camp series, cobbles or stones typically modify the Bt horizon.

Orovada Series

The Orovada series consists of very deep, well drained soils that formed in loess high in content of volcanic ash over alluvium derived from mixed rock sources. Orovada soils are on fan skirts, fan aprons, and inset fans. Slopes are 0 to 15 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Durixerollic Camborthids

Typical pedon: Orovada fine sandy loam, 2 to 4 percent slopes:

A1—0 to 4 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; strong coarse prismatic structure parting to platy; slightly hard, very friable, slightly sticky and slightly plastic; many very fine random roots; many very fine vesicular, interstitial, and tubular pores; neutral (pH 7.2); abrupt wavy boundary. (2 to 8 inches thick)

A2—4 to 8 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; weak coarse and very coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine random and few fine and medium oblique roots; common very fine tubular and interstitial pores; mildly alkaline (pH 7.8); clear wavy boundary. (0 to 6 inches thick)

Bw—8 to 20 inches; light gray (10YR 7/2) fine sandy loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine random and very few fine and medium oblique roots; common very fine tubular and many very fine interstitial pores; moderately alkaline (pH 7.8); clear wavy boundary. (4 to 15 inches thick)

Bqk1—20 to 31 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine random and very few fine and medium oblique roots; common very fine tubular and interstitial pores; 15 percent 10- to 30-millimeter, moderately strong durinodes; strongly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary. (5 to 12 inches thick)

Bqk2—31 to 44 inches; light gray (10YR 7/2) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine random and very few fine and medium oblique roots; few very fine tubular and common very fine interstitial pores; 5 percent pebbles; 25 percent 10- to 30-millimeter, moderately strong durinodes; strongly effervescent; strongly alkaline (pH 8.8); gradual smooth boundary. (6 to 14 inches thick)

Bqk3—44 to 65 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine tubular and common very fine interstitial pores; 5 percent pebbles; 15 percent 2- to 20-millimeter, moderately strong and strong durinodes; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; about 9 miles north of Battle Mountain, approximately 1,550 feet east and 1,400 feet north of the southwest corner of sec. 28, T. 34 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to Bq or Bqk horizon: 10 to 28 inches
Control section: Texture—fine sandy loam, very fine sandy loam, loam, or silt loam that has strata of loamy fine sand or sandy loam in some pedons; clay content—5 to 18 percent; rock fragments—0 to 15 percent, mainly pebbles
Other features: Value of the uppermost 7 inches greater than 5.5 dry and 3.5 moist when mixed

A horizon:
Hue—10YR or 2.5Y
Value—5, 6, or 7 dry, 3 or 4 moist
Chroma—2 to 4

Structure—platy or prismatic; massive in some pedons
Consistence—soft or slightly hard
Reaction—neutral to moderately alkaline

Bw horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 3, 4, or 5 moist
Chroma—2 to 6
Texture—fine sandy loam, very fine sandy loam, loam, silt loam
Clay content—5 to 18 percent
Rock fragments—averages 0 to 15 percent pebbles
Structure—subangular blocky or prismatic; massive in some pedons
Reaction—mildly alkaline or moderately alkaline

Bq or Bqk horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 3, 4, or 5 moist
Chroma—2 to 6
Rock fragments—up to 30 percent pebbles in some subhorizons of some pedons
Consistence—soft to hard and very friable or friable
Reaction—moderately alkaline to very strongly alkaline, becoming more alkaline with depth
Cementation—20 to 80 percent durinodes
Other features—gypsum crystals below a depth of 37 inches in some pedons; duripans or very gravelly strata below a depth of 40 inches in some pedons

Osoll Series

The Osoll series consists of shallow, well drained soils that formed in some loess but mainly in residuum and colluvium derived from mixed rock sources. Osoll soils are on side slopes and crests of hills. Slopes are 2 to 50 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 50 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic, shallow Typic Durorthids

Typical pedon: Osoll gravelly loam, 2 to 8 percent slopes, in an area of the Laped-Colbar-Osoll association. Pebbles cover 30 percent of the soil surface:

A—0 to 5 inches; light gray (10YR 7/2) gravelly loam, dark brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine vesicular pores; 30 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (3 to 6 inches thick)

Bqk—5 to 12 inches; very pale brown (10YR 7/3) very gravelly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine interstitial pores; 20 percent 5- to 20-millimeter, weak to moderate durinodes; 30 percent pebbles, 15 percent cobbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (4 to 9 inches thick)

Bqkm—12 to 35 inches; very pale brown (10YR 7/4) cobbly indurated duripan, yellowish brown (10YR 5/4) moist; strong thick plates with massive strata in between; extremely hard, extremely firm; continuous fractured silica-cemented laminae on top and in bands throughout horizon, separated by discontinuous strong and weakly silica-cemented strata with 20 percent 5- to 20-millimeter, hard silica and lime concretions; violently effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary. (12 to 28 inches thick)

R—35 inches; hard rhyolite; capped with ½-inch-thick, silica-cemented laminae.

Type location: Lander County, Nevada; about 52 miles southwest of Battle Mountain, approximately 800 feet north of the southwest corner of sec. 36, T. 24 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry, intermittently moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to duripan: 8 to 14 inches
Depth to bedrock: 20 to 40 inches
Control section: Texture—very gravelly loam and very gravelly fine sandy loam; clay content—10 to 18 percent; rock fragments—average 35 to 60 percent, mostly pebbles and some cobbles

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Reaction—mildly alkaline or moderately alkaline

Bqk horizon:
Durinodes—up to 30 percent, weak to hard in any subhorizon
Reaction—moderately alkaline or strongly alkaline

Osoll Variant

The Osoll Variant consists of moderately deep, well drained soils that formed in colluvium of basalt and tuff. Osoll Variant soils are on side slopes of hills. Slopes are 8 to 15 percent. Mean annual precipitation is about

7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Durorthids

Typical pedon: Osoll Variant gravelly loam, 4 to 15 percent slopes, in an area of the Osoll Variant-Oxcorel association. Pebbles cover 25 percent of the soil surface:

A1—0 to 2 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine vesicular pores; 30 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 5 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and few very fine and medium roots; common very fine tubular pores; 15 percent 5- to 20-millimeter, weak duriodes; 15 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary. (2 to 4 inches thick)

Bq—5 to 10 inches; very pale brown (10YR 7/3) gravelly loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and few very fine and medium roots; common very fine tubular pores; 15 percent 5- to 20-millimeter, weak durinodes; 15 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary. (4 to 7 inches thick)

Bqk1—10 to 17 inches; very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and few medium roots; common very fine tubular pores; 20 percent 5- to 20-millimeter, weak and moderate durinodes; 40 percent pebbles; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (5 to 10 inches thick)

Bqk2—17 to 26 inches; white (10YR 8/2) very gravelly loam, brownish yellow (10YR 6/6) moist; massive; hard, firm, nonsticky and nonplastic; few very fine roots; few fine tubular pores; 30 percent weak discontinuous silica cementation with 10 percent thin discontinuous strongly silica-cemented horizontal plates; 20 percent 5- to 20-millimeter, strong durinodes; 40 percent pebbles; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (6 to 10 inches thick)

Bqkm—26 to 40 inches; white (10YR 8/2) indurated duripan, brownish yellow (10YR 6/6) moist; massive; very hard, very firm; few fine roots along fracture planes; continuous thin indurated laminae cap on strongly cemented matrix; 45 percent rock fragments; violently effervescent; strongly alkaline (pH 9.0).

Type location: Lander County, Nevada; approximately 45 miles southwest of Battle Mountain, about 600 feet north and 900 feet west of the southeast corner of sec. 31, T. 25 N., R. 42 E.

Range in Characteristics

Soil moisture: Usually dry, moist for short periods in winter and spring

Soil temperature: 47 to 52 degrees F

Depth to Bqkm horizon: 20 to 35 inches

Control section: Clay content—15 to 22 percent, when averaged; rock fragments—35 to 50 percent, mostly pebbles

Effervescence: Slight to violent, the degree increasing with depth

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4

Bq horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—3 or 4
- Durinodes—up to 20 percent, weak or strong

Bqk horizon:
- Value—6 to 8 dry, 5 or 6 moist
- Chroma—2 to 6
- Cementation—as much as 60 percent weak discontinuous silica cementation, as much as 20 to 50 percent weakly through strongly cemented durinodes in pan fragments, and as much as 30 percent discontinuous strong cementation

Oxcorel Series

The Oxcorel series consists of very deep, well drained soils formed in some loess but mainly in alluvium derived from mixed rock sources. Oxcorel soils are on summits and side slopes of fan piedmont remnants. Slopes are 2 to 30 percent. Mean annual temperature is about 48 degrees F, and mean annual precipitation is about 6 inches.

Taxonomic class: Fine, montmorillonitic, mesic Duric Natrargids

Typical pedon: Oxcorel gravelly fine sandy loam, 2 to 4 percent slopes, in an area of the Wieland-Oxcorel-Allor association. Pebbles cover 20 percent and cobbles 5 percent of the soil surface:

A1—0 to 2 inches; light gray (10YR 7/2) gravelly fine sandy loam, brown (10YR 5/3) moist; moderate very thin and thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine and few fine and medium vesicular pores; 15 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 4 inches thick)

A2—2 to 5 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; moderate very thin and thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular and common very fine tubular pores; 5 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary. (3 to 6 inches thick)

Btn1—5 to 10 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; moderate very fine subangular blocky structure; hard, firm, very sticky and very plastic; many very fine roots; common very fine tubular pores; common thin clay films on faces of peds; 5 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (0 to 14 inches thick)

Btn2—10 to 13 inches; light yellowish brown (10YR 6/4) clay, yellowish brown (10YR 5/4) moist; moderate fine prismatic structure; hard, firm, sticky and very plastic; few fine roots; common very fine tubular pores; common thin clay films on faces of peds and lining pores; 5 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 10 inches thick)

Btnk—13 to 20 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate fine prismatic structure; hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; common thin clay films on peds and lining pores; 20 percent pebbles with thin (less than 1 millimeter) lime coatings on undersides; 10 percent weakly cemented durinodes; few fine (1 millimeter or less in diameter) lime filaments in soil matrix; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (4 to 17 inches thick)

Bqk1—20 to 29 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; massive; hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; 45 percent pebbles with thin (less than 1 millimeter) lime coatings on undersides; 25 percent strongly cemented durinodes; few fine (less than 2 millimeter in diameter) lime filaments in soil matrix; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (8 to 15 inches thick)

Bqk2—29 to 60 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 50 percent pebbles, 5 percent cobbles; 5 percent cobbles with thin (less than 1 millimeter) lime coatings on undersides; 20 percent weakly cemented durinodes; violently effervescent; strongly alkaline (pH 8.8).

Type location: Lander County, Nevada; about 22 miles southeast of Battle Mountain, approximately 1,500 feet north and 1,500 feet west of the southeast corner of sec. 36, T. 29 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist for short periods in winter and early spring

Soil temperature: 47 to 52 degrees F

Depth to base of natric horizon: 20 to 40 inches

Depth to durinodes: 20 to 34 inches

Control section: Texture—clay or clay loam; clay content—35 to 50 percent; rock fragments—0 to 10 percent pebbles in the upper part, 10 to 20 percent pebbles in the lower part

Other features: ½- to 2-inch-thick E horizon capping the Bt horizon in some pedons

A horizon:
- Value—6 or 7 dry, 3, 4, or 5 moist
- Chroma—2 or 3

Btn and Btnk horizons:
- Hue—7.5YR or 10YR
- Value—5, 6, or 7 dry, 4, 5, or 6 moist
- Chroma—3 to 6, chroma of 3 is common in the upper subhorizons of some pedons
- Reaction—moderately alkaline to very strongly alkaline
- Carbonates—noneffervescent to strongly effervescent matrix in the Btn horizon, segregated lime commonly in the Btnk horizon
- Cementation—10 to 30 percent durinodes common in the Btnk horizon
- Other features—gypsum common in the Btnk horizon of some pedons

Bqk horizon:
- Value—5, 6, or 7 dry, 4, 5, or 6 moist
- Chroma—3 to 6
- Rock fragments—35 to 60 percent
- Texture—very gravelly sandy loam or very gravelly loam

Cementation—20 to 60 percent, weakly or strongly cemented durinodes, commonly as much as 30 percent weak discontinuous cementation
Other features—subhorizon that is less than 20 percent durinodes in the upper part of some pedons

Packer Series

The Packer series consist of very deep, well drained soils that formed in some loess and volcanic ash but mainly in residuum weathered from chert, shale, quartzite, and extrusive volcanic rocks. Packer soils are on crests and side slopes of mountains. Slopes are 8 to 50 percent. Mean annual precipitation is about 15 inches, and mean annual temperature is about 42 degrees F.

Taxonomic class: Loamy-skeletal, mixed Argic Cryoborolls

Typical pedon: Packer extremely gravelly loam, 15 to 30 percent slopes, in an area of the Packer-Newlands association, in Lander County, south part. Pebbles cover 70 percent and cobbles and stones 20 percent of the soil surface:

A1—0 to 7 inches; brown (10YR 5/3) extremely gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate fine granular; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; common very fine interstitial and tubular pores; 45 percent pebbles, 15 percent cobbles, 5 percent stones; neutral (pH 6.8); clear smooth boundary. (2 to 7 inches thick)

A2—7 to 10 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, sticky and plastic; many very fine and fine and common medium roots; common very fine tubular pores; 20 percent pebbles, 20 percent cobbles, 10 percent stones; neutral (pH 6.8); clear wavy boundary. (2 to 6 inches thick)

2Bt—10 to 21 inches; yellowish brown (10YR 5/4) extremely cobbly clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine tubular pores; common moderately thick clay films in pores and on faces of peds; 25 percent pebbles, 30 percent cobbles, 10 percent stones; neutral (pH 7.2); clear wavy boundary. (5 to 11 inches thick)

2C1—21 to 46 inches; brown (10YR 5/3) extremely cobbly sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, sticky and plastic; common fine medium roots; common very fine interstitial pores; 30 percent pebbles, 35 percent cobbles, 10 percent stones; neutral (pH 7.3); gradual wavy boundary. (15 to 25 inches thick)

2C2—46 to 60 inches; brown (10YR 5/3) extremely cobbly sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine interstitial pores; 30 percent pebbles, 35 percent cobbles, 10 percent stones; neutral (pH 7.3).

Type location: Lander County, Nevada, south part; about 40 miles northeast of Austin, approximately 1,400 feet east of the southwest corner of sec. 14, T. 20 N., R. 46 E. (part of the BLM contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist from October through late June
Soil temperature: 42 to 45 degrees F
Average summer soil temperature: 57 to 59 degrees F
Mollic epipedon thickness: 7 to 10 inches, includes upper part of Bt horizon in some pedons
Depth to base of Bt horizon: 9 to 21 inches
Depth to bedrock: 40 to more than 60 inches
Control section: Clay content—18 to 30 percent, when averaged; texture—extremely cobbly clay loam, extremely cobbly sandy clay loam, or extremely cobbly loam; rock fragments—60 to 80 percent with 25 to 60 percent pebbles, 20 to 40 percent cobbles, and as much as 10 percent stones
Reaction throughout the profile: Nearly constant throughout the profile
Other features: Thin BA and BC horizons are common in some pedons

A horizon:
Chroma—2 or 3
Structure—weak or moderate, very fine to medium granular or subangular blocky
Consistence—soft or slightly hard dry, very friable or friable moist

2Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Structure—weak or moderate, very fine to medium angular or subangular blocky structure; massive in some pedons
Consistence—slightly hard or hard dry, slightly sticky to very sticky and slightly plastic to very plastic wet

2C horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6
Texture—extremely cobbly loam, extremely cobbly fine sandy loam, extremely cobbly sandy loam, or extremely cobbly loamy sand
Rock fragments—25 to 50 percent pebbles, 20 to 35 percent cobbles, and as much as 10 percent stones
Consistence—soft to very hard dry, very friable or friable moist, slightly sticky or sticky and nonplastic to plastic wet

Paranat Series

The Paranat series consists of very deep, poorly drained soils that formed in silty fluvial deposits. Paranat soils are on flood plains. In some areas stream channel entrenchment or channel realignment has altered drainage. Slopes are 0 to 2 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Fluvaquentic Haplaquolls

Typical pedon: Paranat silty clay loam:

A1—0 to 2 inches; gray (10YR 5/1) silty clay loam, very dark gray (10YR 3/1) moist; strong fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and plastic; many very fine and fine random roots; many very fine vesicular, interstitial, and tubular pores; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 5 inches thick)

A2—2 to 7 inches; gray (10YR 5/1) silty clay loam, very dark gray (10YR 3/1) moist; strong very fine and fine angular blocky structure; slightly hard, very friable, sticky and very plastic; many very fine and fine random and few medium oblique roots; few very fine tubular and common very fine interstitial pores; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (0 to 9 inches thick)

A3—7 to 20 inches; gray (10YR 5/1) silty clay loam, very dark gray (10YR 3/1) moist; moderate medium and coarse prismatic structure parting to weak medium subangular blocky; slightly hard, very friable, sticky and plastic; common very fine and fine random and few medium oblique roots; many micro and very fine tubular and interstitial pores; slightly effervescent; moderately alkaline (pH 8.2); clear irregular boundary. (0 to 13 inches thick)

AC—20 to 31 inches; gray (10YR 6/1) silty clay loam, very dark gray (10YR 3/1) moist; common fine distinct brown (7.5YR 4/4 moist) and dark brown (7.5YR 3/2 moist) mottles; weak medium and coarse prismatic structure parting to moderate medium and coarse subangular blocky; slightly hard, very friable, sticky and very plastic; common very fine and fine random and few medium oblique roots; many very fine tubular and few fine tubular and interstitial pores; common thin silt coatings lining pores; few fine and medium violently effervescent segregated lime filaments or threads; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary. (0 to 15 inches thick)

C1—31 to 36 inches; gray (10YR 6/1) silty clay loam, dark grayish brown (2.5Y 4/2) moist; common fine distinct brown (7.5YR 4/4 moist) and dark brown (7.5YR 3/2 moist) mottles; massive; slightly hard, very friable, sticky and plastic; common very fine and fine random and weak medium oblique roots; very fine and fine tubular and few fine interstitial pores; many thin and moderately thick silt coatings lining pores; few fine segregated white (10YR 8/2) lime filaments or threads, light gray (10YR 7/2 moist); few snail shells; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (5 to 15 inches thick)

C2—36 to 48 inches; light gray (10YR 7/1) silt loam, grayish brown (2.5Y 5/2) moist; common fine distinct brown (7.5YR 4/4 moist) and dark brown (7.5YR 3/2 moist) mottles; massive; slightly hard, very friable, slightly sticky and plastic; common very fine random and few fine oblique roots; many very fine tubular and few fine interstitial pores; common thin silt coatings lining pores; strongly effervescent; moderately alkaline (pH 8.2); gradual smooth boundary. (9 to 15 inches thick)

Ck—48 to 60 inches; light gray (10YR 7/2) very fine sandy loam, grayish brown (10YR 5/2) moist; common fine distinct brown (7.5YR 4/4 moist) and dark brown (7.5YR 3/2 moist) mottles; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine random and few fine oblique roots; common very fine tubular and few fine interstitial pores; about 10 percent medium irregular shaped segregated lime concretions; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; about 1.6 miles northwest of Battle Mountain, approximately 200 feet south and 500 feet east of the northwest corner of sec. 8, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture: Dry in midsummer and early fall, moist in late fall, winter, spring, and early summer; apparent seasonal high water table at a depth of 18 to 40

inches in winter to early summer; drained phases recognized
Soil temperature: 47 to 52 degrees F
Thickness of mollic epipedon: 10 to 20 inches
Control section: Texture—silty clay loam and silt loam with thin strata of very fine sandy loam or silty clay in some pedons; clay content—18 to 35 percent; rock fragments—less than 5 percent
Calcium carbonate equivalent: 1 to 10 percent
Effervescence: Effervescent throughout
Reaction throughout the profile: Moderately alkaline to strongly alkaline, usually becoming less alkaline with depth
Exchangeable sodium: 0 to 15 percent

A horizon:
Hue—10YR or 2.5Y
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2
Structure—prismatic, blocky, platy, or granular
Other features—one or more buried A horizons as much as 8 inches thick in some pedons

C horizon:
Hue—10YR or 2.5Y
Value—6, 7, or 8 dry, 4, 5, 6, or 7 moist
Chroma—1, 2, 3, or 4
Carbonates—as much as 15 percent lime filaments, soft masses, or concretions in some pedons, as much as 40 percent in some subhorizons below a depth of 40 inches
Consistence—soft or slightly hard dry, very friable or friable moist

Perlor Series

The Perlor series consists of shallow, well drained soils that formed in loess capped residuum of soft, tuffaceous sedimentary rocks. Perlor soils are on crests and side slopes of rolling hills. Slopes are 4 to 15 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Loamy, mixed (calcareous), mesic, shallow Typic Torriorthents

Typical pedon: Perlor very fine sandy loam, 4 to 15 percent slopes, in an area of the Genaw-Perlor-Puett association. Pebbles cover 10 percent of the soil surface:

A1—0 to 3 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 4 inches thick)
A2—3 to 7 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine interstitial pores; 5 percent pebbles; slightly effervescent; moderately alkaline (pH 8.2); gradual wavy boundary. (3 to 5 inches thick)
2C1—7 to 12 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine interstitial pores; 5 percent pebbles; strongly effervescent; strongly alkaline (pH 8.5); clear smooth boundary. (4 to 7 inches thick)
2C2—12 to 14 inches; very pale brown (10YR 7/3) gravelly sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common fine interstitial pores; 30 percent pebbles; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (0 to 4 inches thick)
2Cr—14 inches; fractured, soft, sedimentary tuff; few very fine roots along fractures.

Type location: Lander County, Nevada; about 30 miles southwest of Battle Mountain in the Fish Creek Basin area, approximately 1,375 feet north and 1,450 feet west of the southeast corner of sec. 11, T. 27 N., R. 41 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and early spring
Soil temperature: 47 to 52 degrees F
Depth to paralithic contact: 10 to 14 inches
Control section: Clay content—averages 10 to 18 percent; rock fragments—average 5 to 20 percent pebbles with as much as 30 percent in any one subhorizon; as much as 20 percent may be comprised of soft platy pebbles
Reaction throughout the profile: Moderately alkaline or strongly alkaline, usually becoming more alkaline with depth

A horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 or 3
Structure—subangular blocky or platy; massive in some pedons
Effervescence—dominantly noneffervescent or slightly effervescent but ranges to strongly effervescent in some pedons

C horizon:
Value—6 or 7 dry, 4, 5, or 6 moist
Chroma—2 or 3
Texture—loam, sandy loam, or gravelly sandy loam
Structure—subangular blocky; massive in some pedons
Effervescence—slightly effervescent to violently effervescent

Pernty Series

The Pernty series consists of shallow, well drained soils that formed in residuum and some colluvium of quartzite and chert. Pernty soils are on side slopes of mountains. Slopes are 30 to 50 percent. Mean annual precipitation is about 11 inches, and mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Argixerolls

Typical pedon: Pernty very gravelly sandy loam, 30 to 50 percent slopes, in an area of the Sumine-Winada Variant-Pernty association. Pebbles cover 25 percent of the soil surface:

A—0 to 3 inches; brown (10YR 5/3) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; 40 percent pebbles; neutral (pH 6.8); abrupt wavy boundary. (2 to 5 inches thick)

Bt1—3 to 8 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; common very fine tubular and few very fine interstitial pores; few thin clay films on faces of peds; 40 percent pebbles; neutral (pH 7.0); abrupt wavy boundary. (4 to 6 inches thick)

Bt2—8 to 14 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common very fine, fine, and medium and few coarse roots; common very fine tubular and few very fine interstitial pores; common thin clay films on faces of peds and lining pores; 40 percent pebbles, 15 percent cobbles; neutral (pH 7.0); abrupt smooth boundary. (4 to 10 inches thick)

2R—14 inches; chert.

Type location: Lander County, Nevada; about 18 miles south of Battle Mountain, approximately 525 feet north and 2,400 feet west of the southeast corner of sec. 10, T. 29 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in part from late October through early June
Soil temperature: 42 to 47 degrees
Average summer soil temperature: 59 to 64 degrees F
Mollic epipedon thickness: 7 to 10 inches, includes the upper part of the Bt horizon
Depth to base of Bt horizon: 14 to 20 inches
Depth to lithic contact: 14 to 20 inches
Control section: Clay content—25 to 35 percent when mixed; rock fragments—35 to 50 percent when mixed, mainly pebbles or cobbles

A horizon:
Chroma—2 or 3
Structure—weak or moderate granular or subangular blocky

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—very gravelly clay loam, very gravelly loam, or very cobbly clay loam
Structure—weak or moderate subangular blocky; massive in some pedons

Perwick Series

The Perwick series consists of moderately deep, well drained soils that formed in residuum of tuffaceous sediments, consolidated lake sediments, and siltstone. Perwick soils are on dissected, low hills. Slopes are 15 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Xeric Torriorthents

Typical pedon: Perwick very gravelly loam, 30 to 50 percent slopes, in an area of the Colbar-Perwick-Settlemeyer association. Pebbles cover 20 percent and cobbles 15 percent of the soil surface:

A1—0 to 6 inches; pale brown (10YR 6/3) very gravelly loam, dark grayish brown (10YR 4/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; many very fine and fine interstitial pores; 30 percent pebbles, 5 percent cobbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (1 to 9 inches thick)

A2—6 to 9 inches; pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 4/3) moist;

moderate fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine, fine, and medium and common coarse roots; many very fine interstitial pores; 30 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (0 to 8 inches thick)

C1—9 to 12 inches; very pale brown (10YR 7/4) gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; common very fine and fine interstitial pores; 30 percent pebbles; violently effervescent; moderately alkaline (pH 8.2); clear wavy boundary. (3 to 13 inches thick)

C2—12 to 27 inches; light gray (2.5Y 7/2) gravelly sandy loam, light olive brown (2.5Y 5/4) moist; many coarse pale yellow (2.5Y 7/4) and light yellowish brown (10YR 6/4) variegations, light olive brown (2.5Y 5/4) and olive brown (2.5Y 4/4) moist; massive; very hard, very firm, slightly sticky and slightly plastic; few medium and coarse roots; few very fine tubular pores; 25 percent pebbles, 5 percent cobbles; common medium lime filaments and soft masses; violently effervescent; very strongly alkaline (pH 9.6); gradual wavy boundary. (8 to 20 inches thick)

Cr—27 to 48 inches; fractured tuffaceous sediments.

Type location: Lander County, Nevada; about 35 miles southwest of Battle Mountain, approximately 1,000 feet west and 1,000 feet north of the southeast corner of sec. 8, T. 27 N., R. 41 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from June through October

Soil temperature: 48 to 52 degrees F

Depth to paralithic contact: 20 to 40 inches

Control section: Rock fragments—10 to 35 percent, mainly pebbles

Reaction throughout the profile: Moderately alkaline to very strongly alkaline

Effervescence: Strongly effervescent to violently effervescent

A horizon:

Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

C horizon:

Hue—10YR, 2.5Y, or 5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Texture—Sandy loam, fine sandy loam, silt loam, or loam modified by 10 to 35 percent rock fragments

Pineval Series

The Pineval series consists of very deep, well drained soils that formed in mixed gravelly alluvium. Pineval soils are on fan piedmonts and fan aprons. Slopes are 2 to 15 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Durixerollic Haplargids

Typical pedon: Pineval gravelly loam, 2 to 4 percent slopes, in Lander County, south part. Pebbles cover 60 percent and cobbles 10 percent of the soil surface:

A—0 to 5 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and nonplastic; few fine roots; common very fine and fine vesicular pores; 25 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.0); abrupt wavy boundary. (2 to 5 inches thick)

Bt1—5 to 8 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine interstitial pores; few thin clay skins on faces of peds; 35 percent pebbles, 15 percent cobbles; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary. (3 to 6 inches thick)

Bt2—8 to 11 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and common fine and medium roots; common very fine interstitial pores; common thin and few moderately thick clay films on faces of peds; 10 percent 5- to 15-millimeter, weak durinodes; 35 percent pebbles, 15 percent cobbles; few fine lime filaments; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (3 to 7 inches thick)

Bqk1—11 to 24 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine interstitial pores; 50 percent weak discontinuous silica cementation; 55 percent pebbles, 15 percent cobbles; many lime particles; violently effervescent; moderately alkaline (pH 8.4);

gradual wavy boundary. (8 to 20 inches thick)

Bqk2—24 to 33 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, dark brown (10YR 4/3) moist; single grained; loose, nonsticky and nonplastic; many very fine and fine roots; many very fine interstitial pores; 40 percent weak continuous silica cementation; 55 percent pebbles, 15 percent cobbles; common thin lime coatings on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary. (0 to 12 inches thick)

Bk—33 to 60 inches; pale brown (10YR 6/3) extremely gravelly loamy sand, dark brown (10YR 4/3) moist; single grained; loose, nonsticky and nonplastic; many very fine and fine roots; many fine interstitial pores; 60 percent pebbles, 10 percent cobbles; common thin lime coatings on undersides of rock fragments; slightly effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada, south part; about 15 miles northeast of Austin, approximately 650 feet south and 2,100 feet west of the northeast corner of sec. 17, T. 21 N., R. 46 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from mid-June through October

Soil temperature: 47 to 52 degrees F

Reaction throughout the profile: Mildly alkaline or moderately alkaline

A horizon:
- Hue—10YR or 2.5Y
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3

Bt horizon:
- Value—5 or 6 dry
- Chroma—3 or 4
- Texture—very gravelly loam, very gravelly clay loam, or very gravelly sandy clay loam
- Clay content—25 to 35 percent
- Rock fragments—35 to 60 percent, mostly pebbles

Bqk horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Texture—very gravelly sandy loam to extremely gravelly sand
- Rock fragments—35 to 70 percent, mostly pebbles

Prida Series

The Prida series consists of very deep, somewhat poorly drained soils that formed in some volcanic ash but mainly in silty alluvium of mixed rock sources. Prida soils are on alluvial flats. Slopes are 0 to 2 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Aquic Durorthidic Torriorthents

Typical pedon: Prida silt loam. The soil surface is covered with a crust:

A—0 to 5 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; strong very thin, thin, and medium platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine random and few fine and medium vertical and horizontal roots; many very fine vesicular, interstitial, and tubular pores; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (3 to 9 inches thick)

Czy—5 to 7 inches; very pale brown (10YR 8/3) loamy sand, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; very few very fine to medium random roots; many very fine vesicular, interstitial, and tubular pores; a horizontal lens of hard, firm, ½- to 2-inch-thick layer of salt crystals; common fine gypsum filaments; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (2 to 10 inches thick)

Cy—7 to 23 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, sticky and plastic; many very fine random and few fine and medium vertical and oblique roots; common very fine tubular pores; about 5 percent weak, 4- to 20-millimeter durinodes; few fine gypsum filaments and threads; strongly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary. (6 to 21 inches thick)

Cqy—23 to 38 inches; light gray (10YR 7/2) silt loam, yellowish brown (10YR 5/4) moist; common medium distinct yellowish brown (10YR 5/4) mottles, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and plastic; few very fine and fine random roots; many very fine and fine tubular pores; about 25 percent weak and moderately strong, 15- to 30-millimeter durinodes; common fine gypsum concretions; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (6 to 15 inches thick)

Cqk1—38 to 47 inches; white (10YR 8/2) silt loam, yellowish brown (10YR 5/4) moist; common medium distinct light brown (7.5YR 6/4) mottles, brown (7.5YR 4/4) moist; weak thin platy structure; hard, very friable, sticky and plastic; very few very fine and fine random roots; many very fine and few fine tubular pores; common thin reoriented silt coatings

lining pores; 25 percent discontinuous very weakly silica-cemented masses; 10 percent 5- to 20-millimeter, weak durinodes; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (6 to 15 inches thick)

Cqk2—47 to 57 inches; light gray (10YR 7/1) and white (10YR 8/2) silt loam, yellowish brown (10YR 5/4) moist; many fine distinct dark brown (7.5YR 3/2 moist) mottles; massive; hard, friable, sticky and plastic; very few very fine random roots; many very fine and very few fine tubular pores; 25 percent discontinuous weakly silica- and lime-cemented masses; 20 percent weak and moderately strong, 5- to 15-millimeter durinodes; violently effervescent; strongly alkaline (pH 8.6); gradual smooth boundary. (0 to 12 inches thick)

Cq—57 to 62 inches; light gray (10YR 7/1) and white (10YR 8/1) silt loam, pale brown (10YR 6/3) moist; many fine distinct brown (7.5YR 5/4) mottles, dark brown (7.5YR 3/2, 4/2) moist; massive; hard, friable and firm, slightly sticky and slightly plastic; many very fine and very few fine tubular pores; weak and very weak continuous silica cementation; violently effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; about 6 miles southeast of Battle Mountain, approximately 2,000 feet south and 45 feet west of the northeast corner of sec. 16, T. 31 N., R. 45 E.

Range in Characteristics

Soil moisture: Saturated within a depth of 36 to 60 inches from winter through early summer in most years

Soil temperature: 47 to 52 degrees F

Depth to a Cq horizon: 15 to 38 inches

Control section: Clay content—20 to 35 percent when mixed; texture—silt loam or silty clay loam

Salts: Slightly to strongly salt affected; salt crystals in the upper subhorizons of some pedons

Sodium: ESP less than 15 percent in half or more of the uppermost 20 inches

Other features: Unconformable lacustrine material at a depth of 30 to 60 inches in some pedons; iron mottles below a depth of 15 inches in some pedons

A horizon:
- Value—6 or 7 dry, 4 to 6 moist
- Chroma—2 or 3
- Consistence—nonsticky to sticky and nonplastic to very plastic wet
- Reaction—Neutral to very strongly alkaline
- Effervescence—noneffervescent to strongly effervescent

Czy horizon:
- Value—6 to 8 dry, 4 to 6 moist
- Reaction—mildly alkaline to strongly alkaline
- Salt—0.5 to 2 percent soluble salts

Cy horizon:
- Hue—10YR or 2.5Y
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—2 to 4
- Reaction—Mildly alkaline to strongly alkaline

Cq horizon:
- Hue—10YR or 2.5Y
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—1 to 4
- Cementation—20 to 50 percent weak discontinuous silica cementation, few to many silica films in pores and on peds in a firm matrix or 20 to 50 percent durinodes in a friable matrix; subhorizons below a depth of 40 inches in some pedons may be continuously weakly silica cemented

Puett Series

The Puett series consists of shallow, well drained soils that formed in residuum of weathered tuff and tuffaceous sandstone. Puett soils are on low hills. Slopes are 15 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents

Typical pedon: Puett gravelly sandy loam, 15 to 30 percent slopes, very stony, in an area of the Bioya-Shabliss-Puett association. Pebbles cover 25 percent, cobbles 10 percent, and stones 2 percent of the soil surface:

A—0 to 4 inches; light brownish gray (10YR 6/2) gravelly sandy loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many fine tubular pores; 15 percent pebbles, 2 percent stones; lime coatings on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 7 inches thick)

C—4 to 15 inches; pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 4/3) moist; massive; soft, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine tubular pores; 30 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (9 to 15 inches thick)

Cr—15 inches; highly weathered tuff.

Type location: Lander County, Nevada; about 22 miles northeast of Battle Mountain, approximately 100 feet south and 2,000 feet east of the northwest corner of sec. 1, T. 35 N., R. 47 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to bedrock: 10 to 20 inches
Control section: Clay content—5 to 10 percent; rock fragments—as much as 35 percent pebbles
Reaction throughout the profile: Moderately alkaline or strongly alkaline
Carbonates: Strongly or violently effervescent throughout; lime coatings on pebbles in lower part of some pedons

A horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Structure—weak or moderate, thin to thick platy; massive in some pedons

C horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Texture of fine earth—loamy fine sand to loam but dominantly coarse sandy loam to loam; gravelly loam or gravelly sandy loam in some pedons
Structure—subangular blocky; massive in some pedons

Pumper Series

The Pumper series consists of very deep, somewhat excessively drained soils that formed in some loamy loess high in content of volcanic ash but mainly in very gravelly or extremely gravelly sandy alluvium derived from mixed rock sources. Pumper soils are on fan skirts. Slopes are 0 to 2 percent. Mean annual precipitation is about 6 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Sandy-skeletal, mixed, mesic Typic Camborthids

Typical pedon: Pumper silt loam:

A—0 to 6 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine random and few fine oblique roots; many very fine and fine vesicular pores; 5 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (1 to 6 inches thick)

Bw—6 to 12 inches; light gray (10YR 7/2) silt loam, dark grayish brown (2.5Y 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine random, few fine oblique, and few medium horizontal roots; many very fine and few fine tubular pores; 10 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary. (6 to 18 inches thick)

2Bk1—12 to 17 inches; light gray (10YR 7/2) very gravelly loam, brown (10YR 5/3) moist; massive; hard, friable, sticky and plastic; many very fine random roots; few fine oblique and few medium vertical roots; many very fine tubular pores; 50 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (0 to 9 inches thick)

3Bk2—17 to 22 inches; pale brown (10YR 6/3) extremely gravelly coarse loamy sand, brown (10YR 4/3) moist; loose; nonsticky and nonplastic; many very fine random and very few fine oblique roots; 75 percent pebbles; few medium lime segregations in seams and coating pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (0 to 9 inches)

3Bk3—22 to 60 inches; variegated color extremely gravelly coarse sand; single grained; loose, nonsticky and nonplastic; many very fine random and very few fine oblique roots; 80 percent pebbles, 2 percent cobbles; common large lime segregations in seams or coating pebbles; violently effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; about 38 miles northwest of Austin, approximately 1,420 feet east and 1,320 feet south of the northwest corner of sec. 16, T. 24 N., R. 41 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 53 degrees F
Depth to 2Bk horizon: 11 to 24 inches
Control section: Clay content—0 to 10 percent; texture—averages very gravelly sand or extremely gravelly sand; rock fragments—50 to 80 percent, mainly pebbles

A horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Structure—weak or moderate, thin to thick platy; massive in some pedons

Consistence—soft or slightly hard
Reaction—mildly alkaline to strongly alkaline
Other features—slightly effervescent in some pedons because of recharge from dust

Bw horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 or 4 moist (5 dry and 3 moist from dark sand grains)
Chroma—2 or 3
Texture—commonly loam, but very fine sandy loam, silt loam, fine sandy loam, or sandy loam in some pedons
Structure—weak, medium or coarse subangular blocky or prismatic; massive in some pedons
Reaction—mildly alkaline to strongly alkaline

2Bk and 3Bk horizons:
Hue—10YR or 2.5Y
Value—4 to 8 dry, 3 to 6 moist
Chroma—1 to 3
Texture—very gravelly sand to extremely gravelly coarse sand
Reaction—moderately alkaline or strongly alkaline
Carbonates—very thin coatings on at least the underside of rock fragments, few or common soft lime masses in some pedons

Punchbowl Series

The Punchbowl series consists of shallow, well drained soils formed mainly in residuum of andesite, dacite, rhyolite, and tuffs and in shale residuum. Punchbowl soils are on crests and side slopes of hills and mountains. Slopes are 4 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 45 degrees F.

Taxonomic class: Loamy, mixed, frigid Lithic Xerollic Haplargids

Typical pedon: Punchbowl loam, 15 to 30 percent slopes, in an area of Punchbowl-Rock outcrop association, in Lander County, south part. Pebbles cover 25 percent and cobbles 5 percent of the soil surface:

A1—0 to 3 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, sticky and plastic; few very fine roots; many very fine vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.8); abrupt smooth boundary. (2 to 5 inches thick)

A2—3 to 6 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure parting to moderate fine subangular blocky; slightly hard, friable, very sticky and plastic; common very fine and fine and few medium roots; common very fine and fine interstitial pores; 15 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary. (1 to 4 inches thick)

Bt—6 to 10 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, friable, very sticky and very plastic; common very fine and fine and few medium roots; common very fine tubular pores; common thin clay films on faces of peds and lining pores and few moderately thick clay films on faces of peds; 30 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary. (3 to 7 inches thick)

R—10 inches; fractured andesite; soft lime in fractures.

Type location: Lander County, Nevada, south part; approximately 25 miles east of Austin, about 600 feet south and 600 feet east of northwest corner of sec. 4, T. 19 N., R. 47 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from mid-June through early November
Soil temperature: 45 to 47 degrees F
Depth to bedrock: 8 to 14 inches
Control section: Clay content—18 to 35 percent; rock fragments—15 to 35 percent
Reaction throughout the profile: Neutral to moderately alkaline, becoming more alkaline with depth

A horizon:
Value—4, 5, or 6 dry, 3 or 4 moist
Chroma—3 or 4
Carbonates—noneffervescent to strongly effervescent in the lower subhorizon

Bt horizon:
Hue—7.5YR or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4
Texture—gravelly loam, gravelly sandy clay loam, or gravelly clay loam
Clay content—25 to 35 percent
Rock fragments—25 to 35 percent, mostly pebbles
Carbonates—noneffervescent to strongly effervescent matrix; very thin lime coatings on undersides of rock fragments or few soft lime segregations in lower part of some pedons
Other features—few thin patchy colloid coatings on rock fragments in some pedons

Quarz Series

The Quarz series consists of moderately deep, well drained soils that formed in residuum and colluvium of sandstone and shale. Quarz soils are on side slopes of mountains. Slopes are 15 to 50 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Aridic Argixerolls

Typical pedon: Quarz very gravelly loam, 30 to 50 percent slopes, in an area of Quarz-Linrose-Slaven association. Pebbles cover 15 percent of the soil surface:

A1—0 to 2 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine and fine vesicular and few very fine tubular pores; 30 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary. (2 to 8 inches thick)

A2—2 to 9 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular and few very fine interstitial pores; 35 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.8); clear smooth boundary. (0 to 8 inches thick)

Bt1—9 to 13 inches; brown (7.5YR 4/4) very gravelly clay, brown (7.5YR 4/4) moist; strong fine and medium prismatic structure; hard, firm, sticky and plastic; common very fine roots; common very fine tubular pores; 35 percent pebbles, 5 percent cobbles; many thick clay films on faces of peds and lining pores; mildly alkaline (pH 7.8); abrupt wavy boundary. (4 to 10 inches thick)

Bt2—13 to 26 inches; brown (7.5YR 5/4) very gravelly clay, brown (7.5YR 4/4) moist; strong medium and coarse prismatic structure; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine tubular pores; 50 percent pebbles, 5 percent cobbles; continuous thick clay films on faces of peds and lining pores; mildly alkaline (pH 7.6); abrupt smooth boundary. (5 to 15 inches thick)

2R—26 inches; hard fractured shale.

Type location: Lander County, Nevada; about 18 miles southeast of Battle Mountain, approximately 2,500 feet north and 1,600 feet west of the southeast corner of sec. 6, T. 29 N., R. 47 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from late July through October

Soil temperature: 44 to 47 degrees F

Depth to bedrock: 20 to 40 inches

Thickness of mollic epipedon: 7 to 16 inches, which includes the upper part of the argillic horizon in some pedons

Control section: Clay content—35 to 55 percent; rock fragments—35 to 60 percent, mainly pebbles and as much as 15 percent cobbles or stones

Reaction throughout the profile: Neutral or mildly alkaline

A horizon:
- Value—4 or 5 dry, 2 or 3 moist
- Chroma—2 or 3
- Structure—platy, granular, or weak subangular blocky

Bt horizon:
- Hue—5YR, 7.5YR, or 10YR
- Value—4 to 6 dry, 3 or 4 moist
- Chroma—3 to 5
- Texture—dominantly very gravelly clay loam or very gravelly clay; very cobbly clay loam or extremely gravelly clay in some subhorizons
- Structure—subangular blocky, angular blocky or prismatic

Raglan Series

The Raglan series consists of very deep, well drained soils that formed in some loess and volcanic ash but mainly in loamy, mixed alluvium and lacustrine materials derived from mixed rock sources. Raglan soils are on fan skirts. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Duric Camborthids

Typical pedon: Raglan silt loam, gravelly substratum:

A1—0 to 5 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; strong very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine random and very few medium oblique roots; many very fine interstitial pores; slightly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (1 to 5 inches thick)

A2—5 to 8 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; strong thin platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine random and very few fine oblique

roots; many very fine interstitial and few very fine tubular pores; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (3 to 5 inches thick)

Bw—8 to 15 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; strong thin and medium platy structure; slightly hard, friable, slightly sticky and plastic; common very fine random and few fine oblique and horizontal roots; many very fine tubular and interstitial pores; very slightly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary. (6 to 10 inches thick)

Bqk1—15 to 20 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; white (10YR 8/1) lime coatings on faces of peds, white (10YR 8/2) moist; moderate thin platy structure; hard, friable, slightly sticky and plastic; few very fine random exped roots; many very fine tubular and common very fine interstitial pores; silica cementation bridging sand grains; strongly effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (5 to 25 inches thick)

Bqk2—20 to 29 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; few fine distinct brown (7.5YR 5/4) mottles, dark brown (7. 5YR 4/2) moist; massive; hard, friable, slightly sticky and plastic; common very fine random roots; many very fine tubular pores; 25 percent 10- to 25-millimeter, hard, firm, brittle durinodes; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 20 inches thick)

Bqk3—29 to 37 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; few fine distinct brown (7.5YR 5/4) mottles, brown (7.5YR 4/4) moist; very pale brown (10YR 8/3) lime coatings on faces of peds, very pale brown (10YR 7/4) moist; weak thin and medium platy structure; hard, friable, slightly sticky and plastic; very few very fine random and oblique roots; common very fine tubular and few very fine interstitial pores; 5 percent small pebbles; silica cementation bridging sand grains; about 25 percent 10- to 25-millimeter, hard, firm, brittle durinodes; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (0 to 10 inches thick)

Bqk4—37 to 47 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 4/3) moist; common fine distinct light brown (7.5YR 6/4) mottles, brown (7.5YR 5/4) moist; massive; hard, friable, nonsticky and slightly plastic; very few very fine random roots; many very fine tubular pores; 5 percent small pebbles; silica cementation bridging sand grains; about 25 percent 10- to 25-millimeter, hard, firm, brittle durinodes; violently effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (0 to 12 inches thick)

2C—47 to 60 inches; light gray (10YR 7/2) gravelly loamy coarse sand, dark yellowish brown (10YR 4/4) moist; massive; loose, nonsticky and nonplastic; few very fine random roots; about 30 percent fine and medium sized pebbles; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; about 1.7 miles southwest of Battle Mountain, at a site approximately 2,100 feet south and 2,100 feet west of the northeast corner of sec. 30, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, intermittently moist in winter and spring

Soil temperature: 47 to 52 degrees F

Depth to Bqk horizon: 10 to 20 inches

Control section: Clay content—18 to 25 percent; texture—loam, silt loam, very fine sandy loam, clay loam, and silty clay loam, averages silt loam that is 15 percent sand coarser than very fine sand

Profile color:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2, 3, or 4

Reaction throughout the profile: Mildly alkaline to very strongly alkaline, generally becoming more alkaline with depth

Salt and sodium: Normally nonsaline-sodic to slightly saline-sodic to a depth of 10 to 20 inches and slightly to strongly saline-sodic below; moderately or strongly saline-sodic phases are recognized

Other features: Mineralogy is mixed but includes a strong influence of volcanic ash

A horizon:
- Structure—weak to strong very thin to thick platy; massive in some pedons
- Consistence—soft or slightly hard dry
- Effervescence—noneffervescent to strongly effervescent

Bw horizon:
- Structure—thin to thick platy; prismatic; subangular blocky; massive in some pedons
- Effervescence—noneffervescent to strongly effervescent

Bqk horizon:
- Durinodes—20 to 80 percent; up to 40 percent weak discontinuous silica cementation common

in any subhorizon where durinodes are present; hard or very hard dry, firm or very firm moist, and brittle

Consistence—matrix is soft to hard dry, very friable or friable moist

2Bk and 3C horizons (where present):

Hue—2.5Y or 5Y

Structure—platy; massive in some pedons

Effervescence—strongly effervescent or violently effervescent

Other features—lacustrine material that has hue of 2.5Y or 5Y, relict mottles that are reddish in hue (7.5YR or 5YR), and high chroma (4 to 6) iron stains below a depth of 24 inches in some pedons; unrelated, very hard basaltic dikes below a depth of 36 inches in a few pedons

Rasille Series

The Rasille series consists of very deep, well drained soils that formed in silty alluvium derived from loess and mixed rock sources. Rasille soils are on inset fans. Slopes are 0 to 2 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Coarse-silty, mixed, mesic Durixerollic Camborthids

Typical pedon: Rasille silt loam, 0 to 2 percent slopes, in an area of the McConnel-Rasille-Wholan association, in Lander County, south part:

A1—0 to 2 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; mildly alkaline (pH 7.6); abrupt smooth boundary. (2 to 5 inches thick)

A2—2 to 6 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; mildly alkaline (pH 7.6); clear smooth boundary. (0 to 5 inches thick)

Bw—6 to 15 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine and few medium roots; common very fine tubular and interstitial pores; mildly alkaline (pH 7.8); clear wavy boundary. (6 to 20 inches thick)

Bq—15 to 24 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 20 percent 5- to 15-millimeter, weakly cemented durinodes; moderately alkaline (pH 8.2); clear wavy boundary. (0 to 9 inches thick)

Bqk1—24 to 33 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 40 percent 5- to 15-millimeter, strongly cemented durinodes; common fine lime filaments and threads; slightly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary. (7 to 13 inches thick)

Bqk2—33 to 60 inches; very pale brown (10YR 7/3) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; 25 percent 10- to 25-millimeter, weakly cemented durinodes; few fine lime filaments and threads; slightly effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada, south part; approximately 22 miles east of Austin, about 1,000 feet south and 1,000 feet east of the apparent southwest corner of sec. 2, T. 19 N., R. 40 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring

Soil temperature: 47 to 52 degrees F

Depth to carbonates: 12 to 24 inches

Depth to Bq or Bqk horizon: 12 to 24 inches, consists of 20 to 50 percent durinodes in a friable matrix

Control section: Texture—silt loam or very fine sandy loam that is less than 15 percent fine sand or coarser; clay content—10 to 18 percent

Other features: Gravelly substrata below a depth of 40 inches in some pedons

A horizon:

Value—6 or 7 dry, 3 or 4 moist

Chroma—2 or 3

Reaction—neutral or mildly alkaline

Bw horizon:

Chroma—3 or 4

Reaction—mildly alkaline or moderately alkaline

Bqk horizon:

Value—6, 7, or 8 dry, 4, 5, or 6 moist

Chroma—2, 3, or 4
Reaction—moderately alkaline to very strongly alkaline

Redflame Series

The Redflame series consists of very deep, well drained soils that formed in alluvium derived from mixed rock sources. Redflame soils are on fan aprons. Slopes are 4 to 15 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 50 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Duric Haplargids

Typical pedon: Redflame very gravelly loam, 4 to 15 percent slopes, in an area of the Redflame-Kingingham association. Pebbles cover 60 percent and cobbles 5 percent of the soil surface:

A1—0 to 2 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; strong thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine vesicular pores; 40 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 4 inches thick)

A2—2 to 5 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 5/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine vesicular and tubular pores; 25 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (0 to 3 inches thick)

2Bt—5 to 14 inches; pale brown (10YR 6/3) very gravelly clay loam, brown (10YR 5/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular and interstitial pores; common moderately thick clay films on faces of peds and lining pores; 35 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (6 to 12 inches thick)

3Bqk—14 to 31 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; hard, friable, nonsticky and nonplastic; few very fine and fine roots; common very fine tubular and interstitial pores; 45 percent weak discontinuous silica cementation; 55 percent pebbles; common fine and medium lime seams and concretions; strongly effervescent; moderately alkaline (pH 8.4); clear irregular boundary. (6 to 24 inches thick)

3C—31 to 36 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; single grained; loose, slightly sticky and slightly plastic; common very fine and fine roots; few very fine and fine tubular pores; 50 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (5 to 8 inches thick)

3Cq—36 to 42 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, dark yellowish brown (10YR 4/6) moist; single grained; loose, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; 20 percent 5- to 10-millimeter, strong durinodes; 55 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (5 to 11 inches thick)

3Ck—42 to 60 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 5/3) moist; single grained; loose, slightly sticky and nonplastic; few very fine roots; few very fine tubular pores; 50 percent pebbles; strongly effervescent; strongly alkaline (pH 9.0).

Type location: Lander County, Nevada; about 22 miles southeast of Battle Mountain, about 1,000 feet west and 450 feet north of the southeast corner of sec. 17, T. 28 N., R. 47 E.

Range in Characteristics

Soil moisture: Usually dry, moist for short periods in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to Bqk horizon: 10 to 16 inches

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

2Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4
Texture: very gravelly loam or very gravelly clay loam
Clay content—20 to 30 percent
Rock fragments—35 to 50 percent, mainly pebbles

3Bqk and 3Cq horizons:
Value—5, 6, or 7 dry, 4 or 5 moist
Chroma—3, 4, or 6
Cementation: 20 to 60 percent weak discontinuous silica cementation or strongly cemented durinodes

3C and 3Ck horizons:
Value—5, 6, or 7 dry, 4 or 5 moist
Chroma—3, 4, or 6

Rednik Series

The Rednik series consists of very deep, well drained soils that formed in mixed alluvium. Rednik soils are on fan piedmonts. Slopes are 4 to 15 percent. Mean annual precipitation is about 6 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Haplargids

Typical pedon: Rednik very gravelly sandy loam, 8 to 15 percent slopes, in an area of the Oxcorel-Rednik-Veta association:

A1—0 to 2 inch; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; moderate medium and thick platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few medium roots; many very fine and fine vesicular pores; 45 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0.5 inch to 4 inches thick)

A2—2 to 5 inches; pale brown (10YR 6/3) very gravelly fine sandy loam, brown (10YR 4/3) moist; moderate thin and medium platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few medium roots; many very fine vesicular and common fine tubular pores; 35 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (2 to 8 inches thick)

Btn1—5 to 11 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; strong fine and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and fine roots; many very fine and fine tubular pores; few thin clay films on faces of peds; 40 percent pebbles with thin (less than 1 millimeter) lime coatings on undersides; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (5 to 22 inches thick)

Btn2—11 to 16 inches; pale brown (10YR 6/3) very gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; strong fine and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine roots; many very fine and fine tubular pores; few thin clay films on faces of peds; 40 percent pebbles with thin lime coatings on undersides; violently effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 10 inches thick)

2Bk1—16 to 25 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine interstitial pores; 40 percent pebbles with thin lime coatings on undersides; violently effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (2 to 10 inches thick)

2Bk2—25 to 36 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; many very fine interstitial pores; 50 percent pebbles with thin (less than 1 millimeter) lime coatings on undersides; violently effervescent; very strongly alkaline (pH 9.4); gradual smooth boundary. (6 to 12 inches thick)

3Bk3—36 to 47 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine interstitial pores; 55 percent pebbles; thin lime coatings on undersides of rock fragments; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (7 to 20 inches thick)

3Bk4—47 to 60 inches; very pale brown (10YR 7/4) extremely gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine interstitial pores; 50 percent pebbles, 10 percent cobbles; thin lime coatings on undersides of rock fragments; violently effervescent; moderately alkaline (pH 8.0).

Type location: Lander County, Nevada; approximately 20 miles southeast of Battle Mountain, about 1,000 feet north and 1,000 feet west of the southeast corner of sec. 10, T. 29 N., R. 47 E.

Range in Characteristics

Soil moisture: Usually dry, moist for short periods from November through early May

Soil temperature: 47 to 54 degrees F

Thickness of A and Btn horizons: 15 to 30 inches

Control section: Clay content—18 to 27 percent when mixed; rock fragments—35 to 75 percent, mainly pebbles

A horizon:

Hue—2.5Y or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—2, 3, or 4
Structure—weak or moderate, thin to thick platy; fine to coarse subangular blocky
Consistence—soft or slightly hard dry
Reaction—mildly alkaline to strongly alkaline

Btn horizon:

Value—5 or 6 dry, 4 or 5 moist

Texture—very gravelly sandy clay loam, very gravelly sandy loam, extremely gravelly loam, or very gravelly loam
Structure—moderate or strong, medium or fine angular or subangular blocky; massive in some pedons
Reaction—moderately alkaline or strongly alkaline
Exchangeable sodium—15 to 30 percent in some part
Effervescence—strong or violent

2Bk and 3Bk horizons:
Hue—10YR or 7.5YR
Value—6, 7, or 8 dry, 4, 5, or 6 moist
Chroma—2, 3, or 4
Texture—very gravelly fine sandy loam, very gravelly sandy loam, extremely gravelly loamy sand, or very gravelly sand
Rock fragments—35 to 75 percent, mainly pebbles
Reaction—strongly alkaline or very strongly alkaline
Effervescence—strong or violent

Reese Series

The Reese series consists of very deep, poorly drained soils that formed in loamy alluvium derived from mixed sediments that are of mostly volcanic origin and that contain high amounts of pyroclastic materials. Reese soils are on alluvial flats and flood plains. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-loamy, mixed (calcareous), mesic Aeric Halaquepts

Typical pedon: Reese silt loam:

A1—0 to 5 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and plastic; few very fine roots; many very fine vesicular and tubular pores; strongly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary. (4 to 7 inches thick)

A2—5 to 9 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; strong coarse prismatic structure; slightly hard, friable, slightly sticky and plastic; common very fine and few fine, medium, and coarse roots; many very fine vesicular and tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary. (4 to 13 inches thick)

C—9 to 19 inches; variegated light gray (10YR 7/2), pale brown (10YR 6/3), and yellowish brown (10YR 5/4) silty clay loam, variegated brown (10YR 4/3) and dark brown (10YR 3/3) moist; weak very fine and fine angular blocky structure; hard, friable, sticky and plastic; many very fine and few fine, medium, and coarse roots; many very fine interstitial and tubular pores; violently effervescent; strongly alkaline (pH 8.8); gradual smooth boundary. (3 to 10 inches thick)

Cq—19 to 27 inches; variegated pale brown (10YR 6/3) and light gray (10YR 6/1) silty clay loam, variegated brown (10YR 4/3) and very dark gray (10YR 3/1) moist; common fine distinct strong brown (10YR 5/6 moist) and brown (7.5YR 4/4 moist) mottles; weak very fine and fine angular blocky structure; hard, friable, sticky and very plastic; few very fine, fine, and medium roots; common very fine tubular pores; continuous thin silica films on peds and many moderately thick silica films lining pores; 45 percent 5- to-20 millimeter, moderately strong durinodes; slightly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary. (0 to 8 inches thick)

Cqk1—27 to 49 inches; light gray (10YR 6/1) silty clay loam, variegated dark grayish brown (10YR 4/2) and very dark gray (10YR 3/1) moist; common fine distinct brownish yellow (10YR 6/6 moist) and yellowish brown (10YR 5/6 moist) mottles; weak thick platy structure; very hard, firm and very firm, brittle; few very fine and fine roots; many very fine tubular pores; continuous thin silica coatings in pores; weak continuous silica cementation; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (6 to 22 inches thick)

Cqk2—49 to 60 inches; light gray (10YR 7/1) silty clay loam, variegated grayish brown (10YR 5/2) and dark gray (5Y 4/1) moist; common fine distinct yellowish brown (10YR 5/4 moist) and brown (7.5YR 4/4 moist) mottles; massive; hard, firm, very sticky and very plastic; many very fine and fine tubular pores; 40 percent 5- to 15-millimeter, moderately strong durinodes; 20 percent weak discontinuous silica cementation; violently effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; approximately 3.7 miles south of Battle Mountain, about 1,750 feet west of the approximate southeast corner of sec. 5, T. 31 N., R. 45 E.

Range in Characteristics

Soil moisture: Saturated at a depth of 18 to 36 inches for some period during most years
Soil temperature: 47 to 53 degrees F
Depth to weak continuous silica cementation: 15 to 30 inches
Control section: Clay content—18 to 30 percent when mixed; texture—averages loam, clay loam, or silty

clay loam; sand fraction—more than 15 percent fine sand and coarser particles; rock fragments—up to 5 percent pebbles below 25 inches in many pedons

Profile reaction: Strongly alkaline or very strongly alkaline

Other features: Buried A horizons below a depth of 20 inches in some pedons; 20 to 40 percent durinodes; secondary carbonate concretions below a depth of 20 inches in some pedons; unconformable stratified sand and gravel below a depth of 42 inches in some pedons

A horizon:
Hue—2.5Y or 10YR
Value—6 to 7 dry, 4 or 5 moist
Chroma—1 to 4
Consistence—slightly hard or hard dry, slightly sticky or sticky and plastic or very plastic wet

C horizon:
Hue—10YR, 2.5Y, or 5Y
Value—3 to 6 moist
Chroma—1 to 4
Texture—silt loam, silty clay loam, clay loam, and sandy clay loam; thin strata of coarse sandy clay loam in some pedons
Consistence—slightly hard or hard dry, very friable to firm moist, and slightly sticky to very sticky wet
Cementation—Cq horizons are continuously weakly silica cemented; subhorizons containing 20 to 50 percent durinodes or discontinuous cementation are common

Reina Series

The Reina series consists of shallow, well drained soils that formed in residuum of some volcanic ash and loess but mainly of andesite, basalt, quartzite, and tuff. Reina soils are on side slopes of hills. Slopes are 4 to 30 percent. Precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic, shallow Xerollic Durargids

Typical pedon: Reina loam, 4 to 15 percent slopes, in an area of the Trunk-Reina association. Pebbles cover 15 percent of the soil surface:

A1—0 to 2 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many fine vesicular pores; 10 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (1 to 7 inches thick)

A2—2 to 7 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, friable, sticky and plastic; common very fine and fine and few medium roots; many very fine tubular pores; 5 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 6 inches thick)

Bt1—7 to 11 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; many very fine tubular pores; few thin clay films on peds; 25 percent pebbles; moderately alkaline (pH 8.0); clear wavy boundary. (0 to 6 inches thick)

Bt2—11 to 18 inches; yellowish brown (10YR 5/4) very gravelly clay, dark brown (7.5YR 4/4) moist; moderate fine prismatic structure parting to moderate fine subangular blocky; very hard, firm, very sticky and very plastic; few fine roots; few fine tubular pores; continuous moderately thick clay films on peds; 45 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.0); abrupt wavy boundary. (3 to 10 inches thick)

Bqkm—18 to 26 inches; indurated duripan; massive; very hard, very firm; very thin continuous laminar cap; abrupt wavy boundary. (2 to 10 inches thick)

R—26 inches; andesite.

Type location: Lander County, Nevada; about 22 miles northeast of Battle Mountain, 900 feet north and 1,500 feet east of the southwest corner of sec. 35, T. 36 N., R. 46 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from July through October

Soil temperature: 47 to 52 degrees F

Solum thickness and depth to duripan: 14 to 20 inches

Depth to bedrock: 22 to 30 inches

Control section: Clay content—35 to 55 percent; rock fragments—35 to 60 percent, mainly pebbles, 5 to 15 percent cobbles

A horizon:
Value—3 or 4 moist
Reaction—mildly alkaline or moderately alkaline

Bt2 horizon:
Hue—7.5YR, 10YR
Value—4 or 5 dry
Chroma—4 or 5
Texture—averages very gravelly clay or very gravelly clay loam

Bqkm horizon:
Other features—indurated duripan overlying bedrock

Relley Series

The Relley series consists of very deep, well drained soils that formed in mixed silty alluvium of some loess and volcanic ash but mostly of volcanic rocks. Relley soils are on fan skirts and inset fans. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-silty, mixed, mesic Duric Camborthids

Typical pedon: Relley silt loam:

Ap—0 to 4 inches; light gray (2.5Y 7/2) silt loam, dark grayish brown (2.5Y 4/2) moist; weak coarse and very coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few very fine roots; many very fine vesicular and tubular pores; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (3 to 8 inches thick)

A—4 to 8 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate coarse prismatic structure parting to moderate thin and medium platy; slightly hard, very friable, slightly sticky and plastic; common very fine and few fine and medium roots; many very fine vesicular, interstitial, and tubular pores; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (0 to 6 inches thick)

Bw—8 to 16 inches; very pale brown (10YR 7/3) silt loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and plastic; common very fine roots; many very fine and few fine tubular pores; moderately alkaline (pH 8.4); clear wavy boundary. (6 to 11 inches thick)

Bqk1—16 to 21 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and plastic; common very fine and few fine roots; common very fine tubular pores; 25 percent 5- to 40-millimeter, weakly and strongly silica-cemented durinodes; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (4 to 12 inches thick)

Bqk2—21 to 28 inches; very pale brown (10YR 8/3) silt loam, light yellowish brown (10YR 6/4) moist; weak and moderate thin platy structure; slightly hard, friable, slightly sticky and plastic; common very fine and few fine roots; common very fine tubular pores; 10 percent weak durinodes; 40 percent weak discontinuous silica cementation; violently effervescent; many medium white (10YR 8/1) and very pale brown (10Y 8/3 moist) secondary carbonate coatings on peds; strongly alkaline (pH 8.6); clear wavy boundary. (0 to 19 inches thick)

Bk1—28 to 52 inches; very pale brown (10YR 7/3) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; violently effervescent; common fine filaments or threads and small isolated pockets of secondary carbonates; moderately alkaline (pH 8.4); abrupt wavy boundary. (3 to 25 inches thick)

Bk2—52 to 63 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; common fine distinct brown (7.5YR 5/4 moist) and common fine faint dark brown (10YR 3/3 moist) mottles; massive; slightly hard, friable, slightly sticky and plastic; few very fine roots; many very fine tubular pores; violently effervescent; common fine filaments or threads of secondary carbonates; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; approximately 52 miles southwest of Battle Mountain, about 660 feet south and 530 feet east of the northwest corner of sec. 12, T. 24 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 53 degrees F
Control section: Clay content—18 to 27 percent; depth to the Bqk horizon—11 to 25 inches
Relict mottles: Common faint or distinct relict mottles below a depth of 16 inches
Salt and sodium: Normally moderately or strongly salt and sodium affected below a depth of 30 inches
Volcanic ash: A layer of volcanic ash 4 to 8 inches thick common at a depth of 16 to 45 inches
Other features: Coarse sandy loam textures below a depth of 50 inches in some pedons

A horizon:
Hue—2.5Y or 10YR
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 or 3
Consistence—slightly hard or hard, very friable or friable
Reaction—moderately or strongly alkaline

Bw horizon:
Value—6 or 7 dry
Chroma—2, 3, or 4 dry, 3 or 4 moist

Consistence—slightly hard or hard, very friable or friable
Reaction—moderately or strongly alkaline

Bq, Bk, Bqk horizons:
Value—5 to 8 dry, 4 to 6 moist
Chroma—2 to 4
Texture—silt loam with strata of very fine sandy loam or silty clay loam in some pedons
Structure—platy; massive in some pedons
Reaction—moderately to very strongly alkaline
Carbonates—strongly or violently effervescent, except those in the Bq horizon, which are noneffervescent
Silica cementation—20 to 50 percent weak or strongly cemented durinodes; a 4- to 7-inch-thick horizon that is 30 to 50 percent discontinuous weakly silica cemented and is hard and brittle at a depth of 16 to 34 inches
Other features—a continuous weakly or strongly cemented hardpan below a depth of 50 inches in some pedons

Reluctan Series

The Reluctan series consists of moderately deep, well drained soils that formed in residuum and colluvium weathered from rhyolite and other intrusive rocks. Reluctan soils are on side slopes of mountains. Slopes are 8 to 50 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Fine-loamy, mixed, frigid Aridic Argixerolls

Typical pedon: Reluctan gravelly loam, 15 to 30 percent slopes, in an area of the Millerlux-Reluctan-Cleavage association. Pebbles cover 15 percent and cobbles 5 percent of the soil surface:

A1—0 to 2 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine vesicular pores; 15 percent pebbles; neutral (pH 7.2); clear smooth boundary. (2 to 5 inches thick)

A2—2 to 13 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; 15 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (4 to 11 inches thick)

Bt1—13 to 23 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; few thin clay films on faces of peds and in pores; 15 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 10 inches thick)

Bt2—23 to 38 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; 30 percent pebbles; mildly alkaline (pH 7.6); abrupt wavy boundary. (10 to 25 inches thick)

2R—38 inches; rhyolitic tuff.

Type location: Lander County, Nevada; near Maysville Summit, about 14 miles southeast of Battle Mountain, approximately 2,000 feet south and 500 feet west of the northeast corner of sec. 7, T. 29 N., R. 46 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from July through October
Soil temperature: 44 to 47 degrees F
Mollic epipedon thickness: 7 to 17 inches, commonly includes part of argillic horizon
Solum thickness: 20 to 40 inches
Depth to bedrock: 20 to 40 inches

A horizon:
Value—4 or 5 dry
Chroma—2 or 3
Rock fragments—15 to 60 percent, mainly gravel
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—gravelly loam or gravelly clay loam
Clay content—25 to 35 percent
Reaction—neutral or mildly alkaline, generally becoming more alkaline with depth

Ricert Series

The Ricert series consists of very deep, well drained soils formed in thin loess deposits over alluvium weathered from mixed rock sources. Ricert soils are on fan piedmonts. Slopes are 2 to 8 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Duric Natrargids

Typical pedon: Ricert gravelly silt loam, 4 to 8 percent slopes, in an area of the Ricert-Whirlo-Pineval association. Pebbles cover 30 percent and cobbles 5 percent of the soil surface:

A1—0 to 3 inches; pale brown (10YR 6/3) gravelly silt loam, brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine vesicular pores; 30 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 8 inches thick)

A2—3 to 6 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; strong medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.0); abrupt smooth boundary. (0 to 5 inches thick)

Btn—6 to 15 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure; slightly hard, friable, sticky and plastic; common fine roots; common fine tubular pores; many moderately thick clay films on faces of peds; 10 percent pebbles; strongly alkaline (pH 8.8); clear smooth boundary. (4 to 9 inches thick)

Btnk—15 to 18 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common very fine tubular pores; common moderately thick clay films on faces of peds; 10 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (3 to 8 inches thick)

2Bqk1—18 to 24 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm, brittle, nonsticky and nonplastic; few fine roots; common very fine tubular pores; 35 percent pebbles; many medium rounded lime seams; weak continuous silica cementation; strongly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary. (6 to 12 inches thick)

2Bqk2—24 to 29 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; common very fine interstitial pores; weak discontinuous silica cementation; 50 percent pebbles; many medium rounded lime seams; strongly effervescent; strongly alkaline (pH 8.6); gradual wavy boundary. (0 to 6 inches thick)

2Bk1—29 to 35 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, loose, nonsticky and nonplastic; few fine roots; common very fine interstitial pores; 50 percent pebbles; many medium rounded lime seams; strongly effervescent; very strongly alkaline (pH 9.2); diffuse wavy boundary. (0 to 11 inches thick)

2Bk2—35 to 60 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; common very fine interstitial pores; 30 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8).

Type location: Lander County, Nevada; about 28 miles south of Battle Mountain, approximately 400 feet west and 1,870 feet south of the northeast corner of sec. 33, T. 26 N., R. 45 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from mid-May through November

Soil temperature: 47 to 52 degrees F

Depth to Bqk horizon: 14 to 25 inches

Depth to 2Bk horizon: 20 to 40 inches

Control section: Clay content—25 to 35 percent; rock fragments—0 to 10 percent, mainly pebbles

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2, 3, or 4

Btn and Btnk horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—3, 4, or 6
- Texture—loam or clay loam
- Reaction—strongly alkaline or very strongly alkaline
- Exchangeable sodium—15 to 35 percent

Bqk horizon (only in some pedons):
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—3, 4, or 6
- Texture—loam, silt loam, clay loam
- Reaction—strongly alkaline or very strongly alkaline

2Bqk and 2Bk horizons:
- Texture—very gravelly sandy loam, very gravelly loamy sand, or extremely gravelly loamy sand; coarse sand in subhorizons of some pedons
- Rock fragments—averages 35 to 70 percent, commonly increases with depth, mainly pebbles
- Reaction—strongly alkaline or very strongly alkaline
- Gypsum—absent in many pedons

Rixie Series

The Rixie series consists of very deep, poorly drained soils that formed in alluvium of some volcanic ash but mainly of mixed rock sources mostly of volcanic origin. Rixie soils are on flood plains. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Aquic Duric Haploxerolls

Typical pedon: Rixie silty clay loam:

A1—0 to 4 inches; gray (10YR 5/1) silty clay loam, black (10YR 2/1) moist; strong very fine angular blocky structure; hard, friable, sticky and very plastic; many very fine and fine and common medium roots; many very fine interstitial and tubular pores; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (1 to 4 inches thick)

A2—4 to 10 inches; gray (10YR 5/1) silty clay loam, very dark gray (10YR 3/1) moist; strong very fine and fine angular blocky structure; hard, friable, sticky and very plastic; common very fine random and common fine and medium oblique and horizontal roots; many very fine interstitial and tubular pores; strongly effervescent; moderately alkaline (pH 8.3); clear smooth boundary. (3 to 13 inches thick)

C—10 to 14 inches; gray (10YR 6/1) silty clay loam, dark grayish brown (10YR 4/2) moist; moderate very fine and fine angular blocky structure; hard, friable, sticky and plastic; many very fine and fine random and very few medium oblique roots; many very fine tubular and common very fine interstitial pores; slightly effervescent; moderately alkaline (pH 8.4); clear irregular boundary. (2 to 6 inches thick)

Ck—14 to 28 inches; white (10YR 8/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; common fine distinct yellowish brown (10YR 5/6) mottles, reddish brown (5YR 4/4) moist; massive; hard, friable, sticky and plastic; common very fine and fine random roots; many very fine tubular pores; few fine irregularly shaped light gray (10YR 7/2 moist) silica-lime concretions; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (0 to 15 inches thick)

Cqk—28 to 34 inches; white (10YR 8/2) silty clay loam, pale brown (10YR 6/3) moist; common fine distinct yellowish red (5YR 5/6) mottles, reddish brown (5YR 4/4) moist; weak very thin and thin platy structure; hard, firm, brittle, sticky and plastic; few very fine random roots; many very fine interstitial and tubular pores; few fine rounded silica-lime concretions; many thin clay films lining pores; weak silica cementation; violently effervescent; moderately alkaline (pH 8.6); clear smooth boundary. (3 to 9 inches thick)

C'k—34 to 43 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 5/3) moist; common fine distinct reddish brown (5YR 5/4) mottles, dark reddish brown (5YR 3/4) moist; massive; slightly hard, very friable, sticky and very plastic; very few very fine random roots; many very fine tubular pores; many thin clay films lining pores; 5 percent pebbles; common fine to medium irregularly shaped white (10YR 8/1) silica-lime concretions; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 10 inches thick)

C'qk—43 to 52 inches; very pale brown (10YR 7/3) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; hard, firm, brittle, slightly sticky and slightly plastic; very few very fine random roots; many very fine tubular and few fine tubular pores; 10 percent pebbles; weak silica cementation; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (3 to 9 inches thick)

2C—52 to 62 inches; light gray (2.5Y 7/2) very gravelly sand, grayish brown (2.5Y 5/2) moist; single grained; loose, nonsticky and nonplastic; 45 percent less than 1 inch pebbles; slightly effervescent; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; about 5 miles northeast of Battle Mountain, approximately 3,400 feet north and 900 feet west of the southeast corner of sec. 17, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture: Dry in mid-summer and early fall, moist in late fall through early summer; apparent seasonal water table at a depth of 24 to 48 inches in winter through early summer; drained phases recognized

Soil temperature: 47 to 51 degrees F

Mollic epipedon thickness: 10 to 16 inches

Depth to weak continuous silica cementation: 24 to 38 inches

Control section: Clay content—25 to 35 percent when mixed; texture—dominantly clay loam and silty clay loam; thin strata of fine sandy loam to silty clay and volcanic ash in most pedons

Profile reaction: Mildly alkaline to very strongly alkaline

Effervescence: Calcareous throughout; dominantly strongly to violently effervescent but some subhorizons are slightly effervescent

Other features: Some pedons have a layer below a depth of 40 inches of sandy loam to sand commonly modified by rock fragments

A horizon:
Hue—10YR or 2.5Y
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 or 2
Structure—weak to strong, very thin to thick platy; moderate or strong, very fine to medium granular, angular blocky, or subangular blocky; massive in some pedons
Consistence—soft to hard dry
Other features—buried A horizon as much as 6 inches thick in some pedons

C horizons:
Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—1 to 4
Consistence—slightly hard to extremely hard dry
Mottles—high chroma or yellowish hue in any horizon below a depth of 12 inches
Other features—Ck horizons that have few to many, fine or medium, extremely hard, silica-lime-cemented concretions below depths of 14 inches

Robson Series

The Robson series consists of shallow, well drained soils that formed in residuum derived from igneous rock. Robson soils are on crests and side slopes of hills and mountains. Slopes are 8 to 50 percent. Mean annual precipitation is about 15 inches, and mean annual temperature is about 43 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Xerollic Haplargids

Typical pedon: Robson very cobbly loam, 15 to 30 percent slopes, in an area of the Zoesta-Robson-Softscrabble association, in Lander County, south part. Pebbles cover approximately 30 percent and cobbles and stones 50 percent of the soil surface:

A—0 to 2 inches; grayish brown (10YR 5/2) very cobbly loam, dark brown (10YR 3/3) moist; moderate thin platy structure parting to moderate fine granular; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine vesicular pores; 10 percent pebbles, 40 percent cobbles, 5 percent stones; neutral (pH 6.8); abrupt smooth boundary. (2 to 10 inches thick)

Bt1—2 to 5 inches; pale brown (10YR 6/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine and few medium roots; common very fine and fine interstitial pores; few fine clay films on peds; 10 percent pebbles, 35 percent cobbles; neutral (pH 6.8); abrupt smooth boundary. (3 to 6 inches thick)

Bt2—5 to 15 inches; pale brown (10YR 6/3) very cobbly clay, dark brown (10YR 4/3) moist; strong medium and coarse angular blocky structure; hard, firm, very sticky and very plastic; few very fine roots; common very fine tubular pores; many moderately thick clay films in pores and on peds; 20 percent pebbles, 35 percent cobbles; mildly alkaline (pH 7.8); clear irregular boundary. (4 to 10 inches thick)

R—15 inches; fractured andesite.

Type location: Lander County, Nevada, south part; approximately 1,500 feet east and 750 feet north of the southwest corner of sec. 29, T. 20 N., R. 47 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 44 to 47 degrees F
Depth to bedrock: 12 to 20 inches
Control section: Clay content—40 to 50 percent; rock fragments—50 to 75 percent when mixed, mainly cobbles

A horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist; the uppermost 7 inches averages more than 5.5 dry when mixed
Chroma—2 or 3
Structure—very thin or thin platy or very fine to medium subangular blocky or granular

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Structure—weak to strong, very fine to coarse prismatic, subangular blocky, or angular blocky
Reaction—neutral or mildly alkaline
Other features—the uppermost few inches of bedrock commonly fractured into angular cobble- or pebble-size fragments in most pedons

Roca Series

The Roca series consists of moderately deep, well drained soils that formed in residuum and colluvium weathered from chert and shale. Roca soils are on south-facing side slopes of mountains. Slopes are 15 to 75 percent. Mean annual precipitation is about 10

inches, and mean annual temperature is about 43 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Xerollic Haplargids

Typical pedon: Roca very gravelly loam, 30 to 50 percent slopes, in an area of the Roca-Linrose-Wiskan association. Pebbles cover 45 percent of the soil surface:

A—0 to 5 inches; light brownish gray (10YR 6/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine tubular and common very fine vesicular pores; 40 percent pebbles, 1 percent cobbles; neutral (pH 7.2); clear smooth boundary. (3 to 6 inches thick)

Bt1—5 to 10 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and common fine roots; many very fine tubular pores; 35 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary. (5 to 14 inches thick)

Bt2—10 to 18 inches; yellowish brown (10YR 5/4) very gravelly clay, brown (10YR 4/3) moist; strong fine angular blocky structure; hard, firm, sticky and plastic; common very fine and few fine roots; many very fine tubular pores; continuous moderately thick clay films on faces of peds and lining pores; 50 percent pebbles; mildly alkaline (pH 7.4); gradual wavy boundary. (6 to 16 inches thick)

Bt3—18 to 27 inches; light yellowish brown (10YR 6/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; strong fine angular blocky structure; hard, firm, sticky and plastic; common very fine roots; many very fine tubular pores; continuous moderately thick clay films on faces of peds and lining pores; 50 percent pebbles; mildly alkaline (pH 7.8); abrupt irregular boundary. (0 to 10 inches thick)

2R—27 inches; fractured chert.

Type location: Lander County, Nevada; about 15 miles southeast of Battle Mountain, approximately 1,000 feet south and 2,000 feet east of the northwest corner of sec. 24, T. 30 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 43 to 47 degrees F
Depth to bedrock: 20 to 40 inches

A horizon:
Hue—10YR or 2.5Y
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Structure—granular or platy
Reaction—slightly acid to mildly alkaline

Bt horizon:
Hue—10YR or 7.5YR; 2.5Y in the lower subhorizons of some pedons
Value—5 to 7 dry, 3 to 7 moist
Chroma—3 to 6
Texture—very gravelly clay or very gravelly clay loam
Clay content—35 to 50 percent
Rock fragments—35 to 50 percent, mainly pebbles
Structure—moderate or strong, medium or fine angular blocky or subangular blocky
Reaction—neutral to moderately alkaline, usually becoming more alkaline with depth
Other features—secondary carbonates, violently effervescent in the lower subhorizons in some pedons

Rose Creek Series

The series consist of very deep, poorly drained soils that formed in stratified mixed alluvium. Rose Creek soils are on flood plains. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Fluvaquentic Haploxerolls

Typical pedon: Rose Creek silty clay loam:

A1—0 to 3 inch; gray (10YR 5/1) silty clay loam, very dark gray (10YR 3/1) moist; moderate very thin and thin platy structure parting to moderate very fine subangular blocky; hard, firm, sticky and very plastic; common very fine random and common fine and medium vertical and oblique roots; few very fine interstitial and tubular pores; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary. (0.5 inch to 3 inches thick)

A2—3 to 10 inches; dark gray (10YR 4/1) silty clay loam, very dark gray (10YR 3/1) moist; few fine distinct red (2.5YR 4/6) mottles, dark red (2.5YR 3/6) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; many very fine random and common fine oblique, vertical, and horizontal roots; common very fine vesicular, interstitial, and tubular pores; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (4 to 8 inches thick)

A3—10 to 14 inches; gray (10YR 5/1) very fine sandy loam, very dark grayish brown (10YR 3/2) moist;

common fine distinct reddish brown (2.5YR 4/4) mottles, dark reddish brown (2.5YR 3/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine random and common fine vertical and oblique roots; common very fine vesicular, interstitial, and tubular pores; strongly effervescent; moderately alkaline (pH 8.4); clear irregular boundary. (0 to 10 inches thick)

C1—14 to 34 inches; grayish brown (2.5Y 5/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; medium distinct reddish brown (2.5YR 4/4) mottles, dark reddish brown (2.5YR 3/4) moist; massive; soft, very friable, nonsticky and slightly plastic; common very fine random, common fine vertical and oblique, and few medium oblique and horizontal roots; many very fine interstitial and tubular pores; krotovina, 2 to 3.5 inches in diameter, in the approximate center of the horizon; a horizontal lens of silt loam 2 or 3 inches thick crosses the horizon; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (5 to 20 inches thick)

C2—34 to 51 inches; light brownish gray (10YR 6/2) very fine sandy loam, dark grayish brown (2.5Y 4/2) moist; many medium distinct reddish brown (2.5YR 4/4) mottles, dark reddish brown (2.5YR 3/4) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine and fine random and few medium oblique and horizontal roots; many very fine interstitial and tubular pores; one medium horizontal root paralleling the horizon boundary at 50 to 51 inches; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary. (10 to 20 inches thick)

2C3—51 to 60 inches; variegated very gravelly sand; single grained; loose, nonsticky and nonplastic; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; approximately 1.1 miles northeast of Battle Mountain, about 900 feet south and 500 feet east of the northwest corner of sec. 16, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture: Dry in mid-summer and early fall, moist in late fall, winter, spring, and early summer; during most years, saturated to within a depth of 10 inches for short periods; apparent seasonal high water table at a depth of 20 to 36 inches in spring; drained phases recognized

Soil temperature: 47 to 52 degrees F

Mollic epipedon thickness: 10 to 18 inches

Control section: Clay content—8 to 18 percent when averaged; texture—averages sandy loam, fine sandy loam, very fine sandy loam, or loam that is more than 15 percent fine sand and coarser particles; includes stratified sand to silt loam and may include strata of coarse sand or silty clay loam

Rock fragments: The coarser textures as much as 15 percent pebbles in some pedons

Effervescence: Slightly effervescent in most of the profile but individual horizons noneffervescent to violently effervescent in some pedons

Profile reaction: Neutral to very strongly alkaline, depending on the presence of sodium and lime

A horizon:

Hue—10YR or 2.5Y

Value—4 or 5 dry, 2 or 3 moist, the uppermost 1 to 3 inches in some pedons has value of 7 dry and 4 moist as a result of flood deposition

Chroma—1 or 2

Structure—weak or moderate, fine to coarse subangular blocky or prismatic structure; very thin to thick platy in the immediate surface; massive in some pedons

Consistence—hard dry in some pedons, but not in massive horizons

Other features—buried A horizon in some pedons

C horizons:

Hue—10YR to 5Y

Value—5 to 7 dry and 3 to 6 moist

Chroma—1, 2, or 3

Mottles—iron mottles that have hue of 2.5YR to 10YR and chroma of 3 to 8 generally at a depth of 20 to 40 inches but as shallow as 3 inches in some pedons irrigated by controlled flooding

Rosney Series

The Rosney series consists of very deep, well drained soils that formed in loess capped silty alluvium or lacustrine materials derived from some volcanic ash but mainly of mixed rock sources. Rosney soils are on alluvial flat remnants and fan skirts. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Typic Torriorthents

Typical pedon: Rosney silt loam:

A1—0 to 3 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate thick and very thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine random and very few fine and medium vertical roots; many very fine vesicular and interstitial pores;

violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 7 inches thick)

A2—3 to 7 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; strong coarse prismatic structure parting to moderate medium and thick platy; slightly hard, very friable, slightly sticky and slightly plastic; common very fine random and common fine and medium oblique roots; common very fine tubular pores; fine gypsum crystals in filaments and threads; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (0 to 5 inches thick)

C1—7 to 16 inches; pale brown (10YR 6/3) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine random, few fine and medium oblique, and few medium horizontal roots; common very fine tubular pores; one 3- to 4-inch krotovina; violently effervescent; strongly alkaline (pH 8.9); clear wavy boundary. (5 to 10 inches thick)

C2—16 to 25 inches; very pale brown (10YR 7/3) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine random and very few medium oblique roots; many very fine tubular pores; fine gypsum crystals in filaments and threads; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (9 to 25 inches thick)

2C3—25 to 32 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; few fine faint mottles, brown (7.5YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine random roots; many very fine tubular pores; gypsum crystals in filaments and threads; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (7 to 15 inches thick)

2C4—32 to 53 inches; pale brown (10YR 6/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, sticky and plastic; very few very fine random and very few fine vertical roots; many very fine tubular pores; fine gypsum crystals in filaments and threads; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (0 to 22 inches thick)

2C5—53 to 60 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; weak thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine tubular pores; fine gypsum crystals in filaments and threads; violently effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; about 5 miles southeast of Battle Mountain, approximately 2,100 feet west and 2,000 feet south of the northeast corner of sec. 36, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in part for short periods from late October through May

Soil temperature: 47 to 52 degrees F

Depth to 2C horizon: 20 to 36 inches

Control section: Clay content—10 to 18 percent in the upper part and 25 to 35 percent in the lower part, averages 20 to 30 percent; texture—dominantly silt loam that has thin strata of very fine sandy loam and volcanic ash in the upper part over stratified silt loam to silty clay, dominantly silty clay loam in the lower part

Mineralogy: Mixed but influenced by volcanic ash and other pyroclastic materials

Profile reaction: Moderately alkaline to very strongly alkaline

Effervescence: Slightly effervescent to violently effervescent

Electrical conductivity: 15 to 35 mmhos/cm

Exchangeable sodium: 35 to 80 percent

Profile color:

Hue—10YR or 2.5Y

Value—6 to 8 dry, 4 or 5 moist

Chroma—2, 3, or 4

Other features: Few to many crystals of gypsum generally present, common only in the lower part of the substratum in some pedons; weakly to strongly silica-cemented horizons below a depth of 40 inches in some pedons

A horizon:

Structure—weak to moderate, thin to thick platy; massive in some pedons

Settlemeyer Series

The Settlemeyer series consists of very deep, poorly drained soils that formed in alluvium derived from mixed rock sources. Settlemeyer soils are on flood plains and inset fans. Slopes are 0 to 4 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 45 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Fluvaquentic Haplaquolls

Typical pedon: Settlemeyer fine sandy loam, drained, 0 to 4 percent slopes:

A1—0 to 5 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; moderate very thin and thin platy structure; slightly hard, friable, nonsticky and nonplastic; common very fine and

fine roots; common fine vesicular pores; mildly alkaline (pH 7.7); clear smooth boundary. (4 to 7 inches thick)

A2—5 to 10 inches; grayish brown (10YR 5/2) sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common very fine and fine interstitial pores; mildly alkaline (pH 7.8); clear smooth boundary. (4 to 12 inches thick)

A3—10 to 16 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; common medium faint dark grayish brown (10YR 4/2 moist) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; common worm casts; moderately alkaline (pH 7.9); clear smooth boundary. (3 to 7 inches thick)

AC—16 to 24 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; common medium distinct yellowish brown (10YR 5/4 moist) and very dark brown (10YR 2/2 moist) mottles; weak medium angular blocky structure; slightly hard, friable, very sticky and plastic; common very fine and fine roots; common very fine tubular pores; common fine lime filaments; moderately alkaline (pH 8.0); clear smooth boundary. (0 to 8 inches thick)

C1—24 to 36 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; few fine distinct dark brown (7.5YR 4/4 moist) and gray (N 5/0 moist) mottles; massive; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; few fine lime seams; moderately alkaline (pH 8.0); gradual smooth boundary. (5 to 20 inches thick)

2C2—36 to 65 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; few fine distinct dark brown (7.5YR 4/4 moist) and gray (N 5/0 moist) mottles; massive; slightly hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; mildly alkaline (pH 7.8).

Type location: Lander County, Nevada; about 32 miles southwest of Battle Mountain, approximately 900 feet east and 2,550 feet south of the northwest corner of sec. 7, T. 27 N., R. 42 E.

Range in Characteristics

Soil moisture: Dry in mid-summer and early fall, moist in late fall through early summer; apparent seasonal water table at a depth of 12 to 36 inches in winter and spring; drained phases recognized

Soil temperature: 47 to 52 degrees F

Mollic epipedon thickness: 12 to 24 inches

Control section: Clay content—25 to 35 percent when mixed; texture—clay, silty clay, silty clay loam, clay loam, loam, silt loam, or very fine sandy loam; sand fraction and pebble-size fragments—15 to 30 percent fine sand or coarser particles

Profile reaction: Neutral to very strongly alkaline, the higher values only in sodium-affected pedons

Other features: O horizon as much as 6 inches thick in some pedons, mainly undecomposed plants and stems

A and AC horizons:

- Value—4 or 5 dry, 2 or 3 moist
- Chroma—1, 2, or 3
- Structure—weak to strong, fine or medium prismatic, platy, blocky, or granular; massive in some pedons
- Consistence—slightly hard or hard dry
- Effervescence—noneffervescent or slightly effervescent in the upper part of the A horizon, not effervescent in all parts of the profile between 10 to 20 inches

C horizon:

- Hue—10YR, 2.5Y, or 5Y
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—1, 2, or 3
- Structure—weak, medium and fine angular blocky; massive in some pedons
- Consistence—slightly hard or hard dry
- Mottles—distinct or prominent iron mottles of reddish, greenish, or yellowish hues and chromas of 1 to 4, or the matrix base colors indicative of gleying
- Other features—some pedons have a few small ¼- or ¾-inch lime concretions

2C horizon:

- Effervescence—noneffervescent or slightly effervescent

Shabliss Series

The Shabliss series consists of shallow, well drained soils that formed in alluvium derived from mixed rock sources with a thin mantle of volcanic ash. Shabliss soils are on fan piedmont remnants. Slopes are 2 to 30 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Haploxerollic Durorthids

Typical pedon: Shabliss very fine sandy loam, 2 to 8 percent slopes, in an area of Bioya-Shabliss-Puett association. Pebbles cover 10 percent and cobbles 4 percent of the soil surface:

A1—0 to 2 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many fine vesicular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 6 inches thick)

A2—2 to 6 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (0 to 4 inches thick)

Bw—6 to 11 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; lime coatings on underside of rock fragments; 5 percent pebbles; slightly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary. (4 to 9 inches thick)

Bq—11 to 16 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; 5 percent pebbles; discontinuously weakly silica cemented; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (0 to 6 inches thick)

Bqkm—16 to 34 inches; very pale brown (10YR 7/3) strongly silica- and lime-cemented duripan, pale brown (10YR 6/3) moist; strong thick platy structure with loam between plates; very hard, very firm; 25 percent pebbles, 25 percent cobbles; violently effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary. (5 to 18 inches thick)

2Ck—34 to 60 inches; very pale brown (10YR 7/3) gravelly loamy sand, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; few very fine and fine tubular pores; 20 percent pebbles, 5 percent cobbles; many fine lime filaments; violently effervescent; strongly alkaline (pH 8.8).

Type location: Lander County, Nevada; about 22 miles north of Battle Mountain, approximately 1,100 feet south and 1,600 feet west of the northeast corner of sec. 18, T. 36 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 55 degrees F
Depth to base of Bw horizon: 10 to 15 inches
Depth to strongly cemented duripan: 10 to 20 inches
Control section: Clay content—5 to 15 percent; texture—averages very fine sandy loam, silt loam, or loam that has thin strata of fine sandy loam in some pedons

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Reaction—neutral to moderately alkaline

Bw horizon:
Value—5 or 6 dry
Chroma—2 to 4
Reaction—neutral to strongly alkaline

Bq or Bqk horizon (in some pedons):
Cementation—5 to 45 percent durinodes in a friable or brittle matrix

Bqkm horizon:
Structure—platy; massive in some pedons
Consistence—very hard or extremely hard
Other features—two or more strongly cemented layers interbedded with weakly cemented material in some pedons

C horizon:
Clay content—0 to 10 percent
Rock fragments—gravelly or very gravelly loamy sand below the duripan in some pedons
Reaction—moderately to very strongly alkaline
Cementation—Cqk horizon that has 5 to 45 percent extremely hard, extremely firm, brittle ⅛- to ½-inch cylindrical durinodes in a friable or firm matrix or is continuously weakly silica cemented in some pedons

Skullwak Series

The Skullwak series consists of very deep, poorly drained soils that formed in fine textured lacustrine sediments derived from mixed rock sources. Skullwak soils are on lake plains. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Fine, montmorillonitic (calcareous), mesic Aeric Halaquepts

Typical pedon: Skullwak silt loam, in an area of the Skullwak-Umberland-Wendane association:

A—0 to 2 inches; light gray (10YR 7/2) silt loam, pale brown (10YR 6/3) moist; moderate medium platy structure; hard, friable, sticky and plastic; few very fine roots; common very fine vesicular pores; strongly effervescent; very strongly alkaline (pH 9.4); abrupt smooth boundary. (1 to 4 inches thick)

C—2 to 10 inches; light gray (10YR 7/2) silty clay loam, yellowish brown (10YR 5/4) moist; moderate fine angular blocky structure; hard, friable, very sticky and very plastic; common very fine and fine roots; common very fine tubular and interstitial pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary. (6 to 11 inches thick)

2Cqk—10 to 17 inches; light gray (10YR 7/2) silty clay loam, yellowish brown (10YR 5/4) moist; many medium distinct light brownish gray (2.5Y 6/2 moist) and light gray (2.5Y 7/2 moist) mottles; moderate fine angular blocky structure; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine interstitial pores; 15 percent 15- to 25-millimeter, strongly cemented durinodes; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary. (0 to 7 inches thick)

3Cqkg1—17 to 30 inches; white (5Y 8/2) silty clay, light olive gray (5Y 6/2) moist; many medium distinct light gray (5Y 7/2 moist) and yellowish brown (10YR 5/4 moist) mottles; massive; very hard, very firm, very sticky and very plastic; common very fine and fine roots; few very fine tubular pores; 75 percent strongly cemented durinodes and discontinuous masses; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (6 to 22 inches thick)

3Cqkg2—30 to 37 inches; light gray (5Y 7/2) silty clay loam, olive gray (5Y 5/2) moist; common fine distinct light gray (5Y 7/2 moist) and yellowish brown (10YR 5/4 moist) mottles; massive; slightly hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; 75 percent strongly cemented durinodes and discontinuous masses; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (7 to 32 inches thick)

3Cg1—37 to 46 inches; light gray (5Y 7/2) silty clay, light olive gray (5Y 6/2) moist; many common distinct olive (5Y 5/6 moist) mottles; moderate fine angular blocky structure; slightly hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (0 to 9 inches thick)

3Cg2—46 to 60 inches; light gray (5Y 7/2) silty clay loam, light olive gray (5Y 6/2) moist; few fine distinct olive (5Y 5/6 moist) mottles; massive; hard, firm, very sticky and very plastic; strongly effervescent; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; approximately 41 miles northeast of Austin in Carico Lake Valley, about 2,400 feet south and 2,200 feet west of the projected northeast corner of sec. 3, T. 23 N., R. 47 E.

Range in Characteristics

Soil moisture: Saturated year round at a depth of 18 to 36 inches

Soil temperature: 47 to 52 degrees F

Depth to Cqk horizon: 8 to 14 inches

Control section: Clay content—35 to 45 percent when mixed; texture—stratified silty clay loam or silty clay

Reaction throughout the profile: Moderately alkaline to very strongly alkaline, generally becoming less alkaline with depth

Salt: Strongly affected above the Cqk horizon and moderately affected within and below the Cqk horizon

Sodium: 25 to 40 percent exchangeable sodium above the Cqk horizon and 15 to 30 percent within and below

A horizon:
- Value—7 or 8 dry, 4, 5, or 6 moist
- Chroma—2 or 3

C and Cqk horizons:
- Hue—10YR in the upper part and 5Y or 2.5Y in the lower part
- Chroma—2 to 4 in the upper part and 1 or 2 in the lower part

Slaven Series

The Slaven series consists of moderately deep, well drained soils that formed in residuum of chert, shale, and quartizite with a small component of loess and volcanic ash. Slaven soils are on side slopes of mountains. Slopes are 15 to 50 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 44 F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Aridic Argixerolls

Typical pedon: Slaven very gravelly loam, 30 to 50 percent slopes, in an area of the Slaven-Glean-Cleavage association. Pebbles cover 45 percent and cobbles 5 percent of the soil surface:

A1—0 to 2 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many very fine and fine interstitial pores; 40 percent pebbles, 5 percent cobbles; neutral (pH 7.0); abrupt wavy boundary. (0.5 inch to 5 inches thick)

A2—2 to 4 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; soft, very friable, sticky and plastic; many very fine and few fine roots; many very fine and fine interstitial pores; 40 percent pebbles, 5 percent cobbles; neutral (pH 7.0); clear wavy boundary. (2 to 5 inches thick)

Bt1—4 to 9 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common thin clay films on faces of peds and in pores; 45 percent pebbles, 10 percent cobbles; neutral (pH 7.2); clear wavy boundary. (3 to 5 inches thick)

Bt2—9 to 22 inches; yellowish brown (10YR 5/4) extremely gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, friable, very sticky and very plastic; few very fine and fine roots; few very fine and fine tubular pores; common thin and few thick clay films on faces of peds and in pores; 50 percent pebbles, 15 percent cobbles; neutral (pH 7.3); clear wavy boundary. (12 to 26 inches thick)

R—22 inches; slightly fractured chert.

Type location: Lander County, Nevada; about 18 miles south of Battle Mountain, approximately 2,000 feet west and 1,500 feet south of the northeast corner of sec. 15, T. 28 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 44 to 47 degrees F
Mollic epipedon thickness: 7 to 12 inches, commonly includes the upper part of the argillic horizon
Depth to bedrock: 20 to 40 inches
Reaction throughout the profile: Slightly acid or neutral

A horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, value of 6 only to a depth of 2 inches or less; dry value less than 5.5 when mixed to a depth of 7 inches
- Chroma—2 or 3
- Structure—weak or moderate, very fine or fine subangular blocky, granular, or platy; massive in some pedons

Bt horizon:
- Hue—10YR or 7.5YR
- Value—4 to 6 dry, 3 to 5 moist
- Chroma—commonly 3 or 4, as high as 6 in some pedons
- Texture—clay, sandy clay, clay loam
- Clay content—35 to 45 percent
- Rock fragments—ranges from 50 to 75 percent in the upper subhorizon and averages 60 to 75 percent for all subhorizons
- Structure—weak or moderate, fine or medium angular or subangular blocky
- Consistence—hard or very hard dry, friable or firm moist

Snapp Series

The Snapp series consists of very deep, well drained soils formed in alluvium derived from mixed rocks. Snapp soils are on fan piedmont remnants. Slopes are 4 to 8 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Clayey over sandy or sandy-skeletal, montmorillonitic, mesic Durixerollic Natrargids

Typical pedon: Snapp gravelly very fine sandy loam, 4 to 8 percent slopes, in an area of the Tomera-Snapp-Whirlo association. Pebbles cover 45 percent of the soil surface:

A1—0 to 4 inches; light brownish gray (10YR 6/2) gravelly very fine sandy loam, dark grayish brown (10YR 4/2) moist; weak very thin and thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine vesicular and few very fine and fine tubular pores; 30 percent pebbles; moderately alkaline (pH 8.2); abrupt smooth boundary. (3 to 10 inches thick)

A2—4 to 10 inches; pale brown (10YR 6/3) gravelly silt loam, brown (10YR 4/3) moist; strong thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine vesicular and common very fine tubular pores; 15 percent pebbles; moderately alkaline (pH 8.2); gradual smooth boundary. (0 to 6 inches thick)

Btn—10 to 17 inches; pale brown (10YR 6/3) gravelly clay, brown (10YR 4/3) moist; strong medium and coarse prismatic structure; hard, firm, very sticky and very plastic; many very fine and few fine roots; common very fine tubular pores; common moderately thick clay films on faces of peds and lining pores; 20 percent pebbles; slightly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (0 to 7 inches thick)

Btnk—17 to 25 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; strong medium and coarse prismatic structure; hard, firm, very sticky and very plastic;

few very fine roots; common very fine tubular pores; common moderately thick clay films on faces of peds and lining pores; 30 percent pebbles, 1 percent cobbles; thin lime coatings on undersides of rock fragments; strongly effervescent; few fine lime filaments and threads; strongly alkaline (pH 9.0); gradual wavy boundary. (5 to 20 inches thick)

Bk—25 to 30 inches; very pale brown (10YR 7/3) gravelly clay loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; common very fine interstitial and few very fine tubular pores; 25 percent pebbles, 5 percent cobbles; thin lime coatings on undersides of rock fragments; violently effervescent; common fine lime filaments and threads; strongly alkaline (pH 8.8); gradual smooth boundary. (0 to 10 inches thick)

2Bqk—30 to 37 inches; very pale brown (10YR 7/3 and 8/3) very gravelly loamy sand, brown (10YR 5/3) and pale brown (10YR 6/3) moist; massive; hard, brittle; few very fine roots; common very fine interstitial pores; weak continuous silica and lime cementation with discontinuous strongly cemented masses; 50 percent pebbles, 1 percent cobbles; violently effervescent; strongly alkaline (pH 8.6); gradual wavy boundary. (8 to 20 inches thick)

2C—37 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; few very fine roots; common very fine interstitial pores; 70 percent pebbles, 1 percent cobbles; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; about 17 miles south of Battle Mountain, approximately 2,500 feet south and 2,500 feet east of the northwest corner of sec. 10, T. 29 N., R. 44 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from June through October

Soil temperature: 47 to 52 degrees F

Combined thickness of A and Bt horizons: 20 to 30 inches

Depth to discontinuity: 20 to 40 inches

Depth to Bqk horizons: 20 to 30 inches

Depth to segregated lime: 3 to 17 inches

Reaction throughout the profile: Moderately alkaline to very strongly alkaline

Other features: Some pedons have C horizons below depths of 3 feet

A1 horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2, 3, or 4

Bt horizon:
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—clay loam, gravelly clay loam, clay, or gravelly clay
- Clay content—35 to 60 percent
- Rock fragments—5 to 35 percent, mainly pebbles
- Structure—angular blocky or prismatic
- Exchangable sodium—15 to 25 percent

Bk horizon (in some pedons):
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—3, 4, or 5
- Rock fragments—15 to 35 percent, mainly pebbles
- Structure—subangular blocky; massive in some pedons

2Bqk horizon:
- Value—6, 7, or 8 dry, 5, 6, or 7 moist
- Chroma—3 to 6
- Texture—very gravelly or extremely gravelly loamy sand or sand
- Rock fragments—35 to 70 percent, mainly pebbles
- Segregated gypsum—gypsum as soft masses or filaments
- Silica cementation—continuously weakly silica cemented in some subhorizons above a depth of 40 inches

Sodhouse Series

The Sodhouse series consists of shallow, well drained soils that formed in alluvium of some loess and volcanic ash but mainly of mixed rock sources. Sodhouse soils are on fan piedmont remnants. Slopes are 8 to 15 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Typic Durorthids

Typical pedon: Sodhouse stony very fine sandy loam, 8 to 15 percent slopes, in an area of the Orovada-Sodhouse association. Stones cover 2 percent of the soil surface:

A—0 to 3 inches; pale brown (10YR 6/3) stony very fine sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; many very fine tubular pores; 2 percent stones; moderately alkaline (pH 8.0); clear smooth boundary. (1 to 6 inches thick)

Bw—3 to 10 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; weak medium

subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; many very fine tubular pores; 5 percent cobbles, 2 percent stones; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 7 inches thick)

Bqk—10 to 17 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; 10 percent 3- to 5-millimeter durinodes; common fine round lime concretions; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (0 to 7 inches thick)

2Bqkm—17 to 29 inches; white (10YR 8/2) indurated duripan, pale brown (10YR 6/3) moist; massive; abrupt smooth boundary. (10 to 24 inches thick)

2Cqk1—29 to 47 inches; very pale brown (10YR 7/3) gravelly sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; 25 percent pebbles, 10 percent cobbles; 15 percent 15- to 30-millimeter durinodes; violently effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 30 inches thick)

3Cqk2—47 to 60 inches; white (10YR 8/2) very gravelly loamy sand, pale brown (10YR 6/3) moist; massive; very hard, firm, nonsticky and nonplastic; few very fine roots; about 30 percent pebbles, 5 percent cobbles, 10 percent stones; continuously weakly silica cemented; violently effervescent; strongly alkaline (pH 9.0).

Type location: Lander County Nevada; about 20 miles north of Battle Mountain, 1,600 feet north and 1,700 feet west of the southeast corner of sec. 8, T. 35 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist for short periods in winter and spring

Soil temperature: 47 to 53 degrees F

Depth to indurated duripan: 14 to 20 inches

Thickness of duripan: 6 to 30 inches

Depth to Ck or Cqk horizon: 25 to 44 inches

Control section: Clay content—8 to 15 percent

Reaction throughout the profile: Moderately alkaline or strongly alkaline, generally becoming more alkaline with depth

Other features: Durinodes and lime accumulations common in subhorizons immediately above the duripan of some pedons; strongly cemented duripans below a depth of 50 inches in some pedons

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Other features—normally noneffervescent, but some pedons slightly effervescent because of lime recharge from dust

Bw horizons:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—very fine sandy loam, fine sandy loam, loam, silt loam, or gravelly loam
- Rock fragments—5 to 35 percent, mainly pebbles
- Structure—moderate subangular blocky; massive in some pedons

2Bqkm horizon:
- Hue—10YR or 2.5Y
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—2 to 4
- Structure—platy; massive in some pedons

2Cqk horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—extremely gravelly sandy loam, gravelly sandy loam, very gravelly loamy sand, or gravelly loam

Softscrabble Series

The Softscrabble series consists of very deep, well drained soils that formed in residuum and colluvium of some chert, quartzite, and shale but mainly of volcanic rocks. Softscrabble soils are on side slopes of mountains. Slopes are 15 to 50 percent. Mean annual precipitation is about 16 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Pachic Argixerolls

Typical pedon: Softscrabble very cobbly loam, 30 to 50 percent slopes, in an area of the Zoesta-Robson-Softscrabble association, in Lander County, south part. Pebbles cover 30 percent, cobbles 15 percent, and stones 10 percent of the soil surface:

A1—0 to 3 inches; dark brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure; slightly hard, friable, nonsticky and nonplastic; many very fine and common fine roots; many very fine vesicular pores; 25 percent pebbles, 20 percent cobbles, 10 percent stones; neutral (pH 7.0); clear smooth boundary. (2 to 10 inches thick)

A2—3 to 9 inches; dark brown (10YR 4/3) gravelly

loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine to coarse roots; many very fine and fine tubular pores; 15 percent pebbles, 5 percent cobbles, 5 percent stones; neutral (pH 7.0); clear smooth boundary. (5 to 10 inches thick)

Bt1—9 to 16 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine and fine tubular pores; common thin clay films on faces of peds; 25 percent pebbles, 5 percent cobbles; neutral (pH 7.2); clear wavy boundary. (7 to 20 inches thick)

Bt2—16 to 22 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate coarse angular blocky structure; hard, friable, sticky and plastic; common very fine and fine and few medium and coarse roots; common fine tubular pores; common thin and few moderately thick clay films on faces of peds; 10 percent pebbles, 35 percent cobbles, 10 percent stones; neutral (pH 6.8); clear wavy boundary. (4 to 18 inches thick)

Bt3—22 to 30 inches; light yellowish brown (10YR 6/4) very cobbly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; common very fine and few fine roots; common fine tubular pores; many thin and few moderately thick clay films in pores and on faces of peds; 20 percent pebbles, 15 percent cobbles, 5 percent stones; neutral (pH 6.8); gradual wavy boundary. (0 to 7 inches thick)

2Bt4—30 to 37 inches; brown (7.5YR 5/4) very gravelly clay loam, dark brown (7.5YR 3/4) moist; strong medium angular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; common moderately thick clay films on faces of peds; 25 percent pebbles; neutral (pH 6.6); gradual smooth boundary. (0 to 12 inches thick)

3Bt5—37 to 60 inches; light brown (7.5YR 6/4) very gravelly clay loam, dark brown (7.5YR 4/4) moist; weak angular blocky structure; hard, friable, sticky and plastic; very few very fine roots; few very fine tubular pores; common moderately thick clay films on peds; 55 percent pebbles; neutral (pH 7.0).

Type location: Lander County, Nevada, south part; about 15 miles east of Austin, approximately 1,000 feet west and 500 feet north of the southeast corner of sec. 1, T. 19 N., R. 46 E. (part of the BLM contract completed in Lander County)

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from mid-July through early October

Soil temperature: 44 to 47 degrees F

Mollic epipedon thickness: 20 to 38 inches

Depth to base of Bt horizon: 60 to 80 inches

Control section: Clay content—27 to 35 percent
Rock fragments—35 to 70 percent pebbles and cobbles with few stones, when mixed

Reaction throughout the profile: Slightly acid or neutral

A horizon:
Hue—10YR or 7.5YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—platy, granular, subangular blocky

Bt horizon:
Hue—10YR or 7.5YR
Value—4, 5, or 6 dry, 3 or 4 moist
Chroma—2 to 4 (4 in lower part only)
Texture—loam and clay loam with an average of 35 to 70 percent rock fragments; as few as 5 percent rock fragments in individual horizons

Sombrero Series

The Sombrero series consists of shallow, somewhat poorly drained soils that formed in loess overlying loamy alluvium or lake sediments from some volcanic ash but from mainly mixed rock sources. Sombrero soils are on stream terraces. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Aquentic Durorthids

Typical pedon: Sombrero very fine sandy loam:

A1—0 to 4 inches; light gray (10YR 7/2) very fine sandy loam, brown (10YR 5/3) moist; moderate coarse prismatic structure parting to moderate very thin and thin platy; slightly hard, very friable, nonsticky and slightly plastic; few very fine random roots; many very fine vesicular and tubular pores; violently effervescent; very strongly alkaline (pH 9.2); abrupt wavy boundary. (2 to 5 inches thick)

A2—4 to 8 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate coarse and very coarse prismatic structure; hard, very friable, slightly sticky and slightly plastic; common very fine random and few fine oblique roots; common very fine tubular pores; violently effervescent; very strongly alkaline (pH 9.2); abrupt wavy boundary. (3 to 6 inches thick)

C—8 to 16 inches; light gray (10YR 7/2) silt loam, yellowish brown (10YR 5/4) moist; few fine distinct dark yellowish brown (10YR 4/4) mottles; moderate fine and medium platy structure; hard, very friable, slightly sticky and slightly plastic; common very fine random and very few fine and medium oblique roots; common very fine tubular pores; violently effervescent; very strongly alkaline (pH 9.2); abrupt wavy boundary. (7 to 12 inches thick)

Cqm—16 to 42 inches; light gray (10YR 7/2) strongly silica-cemented duripan, yellowish brown (10YR 5/4) moist; massive; very hard, extremely firm; very few very fine and fine random roots; common very fine interstitial and tubular pores; violently effervescent; very strongly alkaline (pH 9.6); clear wavy boundary. (5 to 26 inches thick)

2C'1—42 to 57 inches; very pale brown (10YR 7/3) gravelly sandy loam, brown (10YR 4/3) moist; common fine distinct yellowish brown (10YR 5/4) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine interstitial and tubular pores; silica coatings between sand grains; about 25 percent rounded, 2- to 10-millimeter pebbles; very slightly effervescent; strongly alkaline (pH 9.0); abrupt irregular boundary. (8 to 16 inches thick)

3C'2—57 to 67 inches; light variegated gravelly sand; single grained; loose, nonsticky and nonplastic; about 30 percent rounded, 2- to 15-millimeter pebbles; very slightly effervescent; strongly alkaline (pH 9.0).

Type location: Lander County, Nevada; about 6.5 miles south of Battle Mountain, approximately 100 feet south and 1,400 feet west of the northeast corner of sec. 20, T. 31 N., R. 45 E.

Range in Characteristics

Soil moisture: Dry mid-summer and early fall, moist in part late fall through early summer; seasonal high water table at a depth of 36 to 60 inches in late winter or spring; saturated at a depth of 30 to 40 inches in spring in most years

Soil temperature: 47 to 52 degrees F

Depth to strongly cemented duripan: 15 to 20 inches

Profile colors:

Value—5 to 7 dry, 3 to 5 moist

Chroma—1 to 3 dry, 2 to 4 moist

Control section: Clay content—20 to 30 percent when mixed; texture—silt loam or silty clay loam, when averaged; sand fraction—less than 15 percent fine sand and coarser particles; mineralogy—some volcanic ash and other pyroclastic materials but mainly mixed sources

Profile reaction: Strongly alkaline or very strongly alkaline, becoming less alkaline with depth

Salt and sodium: Moderately or strongly salt and sodium affected in the upper part of the profile and slightly affected in the lower part

Other features: Strata of unconformable gravelly sand and sandy loam at any depth below the continuously silica-cemented layer; faint or distinct yellowish brown mottles in the lower part of the C horizon; variable amounts of mica in some pedons

Sonoma Series

The Sonoma series consists of very deep, poorly drained soils that formed in silty alluvium of some volcanic ash but mainly of mixed rocks. In some areas stream channel entrenchment has altered drainage. Sonoma soils are on flood plains and basin floor remnants. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 50 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Aeric Fluvaquents

Typical pedon: Sonoma silty clay loam, frequently flooded:

A—0 to 3 inches; gray (10YR 6/1) silty clay loam, very dark gray (10YR 3/1) moist; strong fine and medium subangular blocky structure; hard, very friable, slightly sticky and plastic; many very fine and fine random and common medium oblique and vertical roots; common very fine interstitial and tubular pores; 1- to 2-millimeter-thick white (10YR 8/1) depositional surface crust, light brownish gray (10YR 6/2) moist; violently effervescent; moderately alkaline (pH 8.2); abrupt irregular boundary. (2 to 10 inches thick)

AC—3 to 8 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; common fine distinct reddish yellow (7.5YR 6/6) mottles, brown (7.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and plastic; many very fine random and common very fine tubular pores; few wormcasts with colors of the A horizon; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (3 to 12 inches thick)

C1—8 to 17 inches; light gray (2.5Y 7/2) silty clay loam, grayish brown (2.5Y 5/2) moist; common fine distinct light brown (7.5YR 6/4) mottles, brown (7.5YR 5/4) moist; massive; slightly hard, friable, slightly sticky and plastic; common very fine random and few fine and medium oblique and vertical roots;

many very fine interstitial and tubular pores; few wormcasts with colors of the A horizon; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (3 to 14 inches thick)

C2—17 to 29 inches; light gray (10YR 7/1) silty clay loam, grayish brown (2.5Y 5/2) moist; common fine distinct brown (7.5YR 4/4) mottles, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine random and few medium oblique roots; many very fine interstitial and tubular pores; common thin clay films lining pores; about 1 percent 5- to 10-millimeter, hard, firm, brittle durinodes; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (8 to 35 inches thick)

C3—29 to 40 inches; white (2.5Y 8/2) silty clay loam, grayish brown (2.5Y 5/2) moist; common fine distinct brown (7.5YR 4/4) mottles, dark brown (7.5YR 3/2) moist; massive; slightly hard, friable, sticky and plastic; few very fine random and few fine and medium oblique roots; many very fine interstitial and tubular pores; common thin clay films lining pores; thin light gray (2.5Y 7/2) moist lime in seams; violently effervescent; moderately alkaline (pH 8.2); abrupt irregular boundary. (0 to 16 inches thick)

C4—40 to 65 inches; white (2.5Y 8/2) silt loam, grayish brown (2.5Y 5/2) moist; common fine distinct strong brown (7.5YR 5/6) mottles, brown (7.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and plastic; very few very fine random and very few fine oblique roots; many very fine and fine interstitial and tubular pores; many thin clay films lining pores; light gray (10YR 7/2 moist) lime in soft masses; violently effervescent; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; about 2.6 miles northeast of Battle Mountain, approximately 1,320 feet west and 530 feet south of the northeast corner of sec. 15, T. 32 N., R. 45 E.

Range in Characteristics

Soil moisture: Unless drained, saturated in spring and early summer, water table below a depth of 40 inches during the rest of the year

Soil temperature: 49 to 53 degrees F

Depth to buried A horizon (where present): 30 to 55 inches

Control section: Clay content—25 to 35 percent; texture—silt loam to silty clay loam that has strata of clay or silty clay in some pedons

Carbonates: Calcium carbonate equivalent 3 to 12 percent throughout the profile, strongly or violently effervescent

A horizon:
- Hue—2.5Y or 10YR
- Value—6 or 7 dry, 3 to 5 moist
- Chroma—1 or 2
- Structure—thin or thick platy, fine or medium subangular blocky
- Reaction—moderately to very strongly alkaline; buried A horizon (where present) is moderately or strongly alkaline

C horizon:
- Hue—10YR to 5Y
- Value—6 to 8 dry, 3 to 5 moist
- Chroma—1 or 2; 3 in some pedons
- Structure—platy or subangular blocky; massive in some pedons
- Reaction—Moderately to very strongly alkaline
- Other features—freshwater crustacean shells and ¼- to ½-inch-diameter lime concretions in most pedons

Sonoma Variant

The Sonoma Variant consists of very deep, very poorly drained soils that formed in some loess and volcanic ash but mainly in silty alluvium. Sonoma Variant soils are on basin floor remnants with the water table under artesian pressure. Slopes are 0 to 2 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Coarse-silty, mixed (calcareous), mesic Typic Fluvaquents

Typical pedon: Sonoma Variant silt loam:

A1—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak very fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine matted roots; common fine tubular pores; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 10 inches thick)

A2—3 to 11 inches; gray (10YR 6/1) silt loam, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine roots; common fine tubular pores; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (3 to 12 inches thick)

Cg—11 to 20 inches; light gray (10YR 7/1) silt loam, dark gray (10YR 4/1) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots; common fine tubular pores; violently

effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (3 to 14 inches thick)

2Abg1—20 to 33 inches; dark gray (10YR 4/1) silt loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common fine and medium roots; strongly alkaline (pH 8.7); abrupt smooth boundary. (8 to 35 inches thick)

2Abg2—33 to 60 inches; dark gray (10YR 4/1) silt loam, black (10YR 2/1) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few fine and medium roots; strongly alkaline (pH 8.7).

Type location: Lander County, Nevada; approximately 17 miles south of Cortez, about 400 feet west and 1,300 feet north of the southeast corner of sec. 32, T. 24 N., R. 48 E.

Range in Characteristics

Soil moisture: Moist year round; fluctuating water table between a depth of 6 to 18 inches throughout the year

Soil temperature: 47 to 52 degrees F

Control section: Clay content—10 to 18 percent

A horizon:

Hue—2.5Y or 10YR or N
Value—6 or 7 dry, 3 to 5 moist

Soolake Series

The Soolake series consists of very deep, somewhat excessively drained soils that formed in alluvium derived from mixed rock sources. Soolake soils are on alluvial flat remnants. Slopes are 0 to 8 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Sandy, mixed, mesic Typic Torriorthents

Typical pedon: Soolake very fine sandy loam, 0 to 2 percent slopes, in an area of the Soolake-Dunphy-Argenta association:

A1—0 to 6 inches; light gray (10YR 7/2) very fine sandy loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine vesicular and tubular pores; strongly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary. (2 to 6 inches thick)

A2—6 to 13 inches; light gray (10YR 7/2) very fine sandy loam, yellowish brown (10YR 5/4) moist; moderate medium and thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (4 to 8 inches thick)

C—13 to 22 inches; very pale brown (10YR 7/3) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (6 to 10 inches thick)

Ck—22 to 49 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; many very fine interstitial pores; common fine irregularly shaped segregated lime concretions and soft masses; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (20 to 35 inches thick)

Cqk—49 to 62 inches; light gray (10YR 7/2) loamy fine sand, brown (10YR 4/3) moist; few fine faint relict yellowish brown (10YR 5/4 moist) mottles; massive; hard, friable and firm, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 10 percent 10- to 20-millimeter, weakly cemented durinodes; common fine and medium irregularly shaped segregated lime filaments or threads; weak and very weak silica cementation; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; approximately 14 miles north of Battle Mountain, about 1,800 feet south and 2,640 feet east of the northwest corner of sec. 8, T. 34 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, intermittently moist in winter and spring

Soil temperature: 48 to 53 degrees F

Control section: Texture—upper part very fine sandy loam or fine sandy loam, silt loam in some pedons; lower part loamy fine sand to sand

Reaction throughout the profile: Strongly alkaline or very strongly alkaline

A horizon:

Hue—10YR or 2.5Y
Value—6 or 7 dry, 3 to 5 moist
Chroma—2 to 4
Structure—platy or prismatic
Effervescence—slightly or strongly effervescent

C horizon:

Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 to 4

Effervescence—strongly or violently effervescent
Duric material—up to 20 percent weakly cemented durinodes in any subhorizon below a depth of 10 inches; continuous very weak or weak silica cementation below a depth of 40 inches in most pedons
Other features—normally slightly saline-alkali above a depth of 13 inches and strongly saline-alkali below

Spike Series

The Spike series consists of very deep, well drained soils that formed in gravelly alluvium derived from mixed rock sources. Spike soils are on side slopes of fan piedmont remnants and partial ballenas. Slopes are 30 to 50 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Haplargids

Typical pedon: Spike very gravelly sandy loam, 30 to 50 percent slopes, in an area of the Pula-Spike association, in Lander County, south part. Pebbles cover 70 percent and cobbles 5 percent of the soil surface:

A1—0 to 1 inch; very pale brown (10YR 7/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many fine vesicular pores; 35 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary. (1 to 6 inches thick)

A2—1 to 2 inches; pale brown (10YR 6/3) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak thin platy structure; slightly hard, friable, slightly sticky and plastic; few very fine roots; many fine vesicular and tubular pores; 25 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 1 inch thick)

Btn—2 to 6 inches; yellowish brown (10YR 5/6) very gravelly clay, dark yellowish brown (10YR 4/6) moist; strong fine angular blocky structure; very hard, firm, very sticky and very plastic; common very fine and fine roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds and in pores; 45 percent pebbles; moderately alkaline (pH 8.4); clear wavy boundary. (1 to 6 inches thick)

Btnk1—6 to 14 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; very hard, friable, very sticky and plastic; few fine roots; common very fine and fine tubular and interstitial pores; common thin clay films on faces of peds and in pores; 45 percent pebbles, 10 percent cobbles; common medium soft lime masses and common thin coatings on the undersides of rock fragments; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (2 to 8 inches thick)

Btnk2—14 to 18 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy clay loam, dark yellowish brown (10YR 4/6) moist; massive; very hard, firm, sticky and plastic; few very fine roots; common very fine and fine tubular pores; common thin clay films bridging mineral grains; 60 percent pebbles, 5 percent cobbles; common thin lime coatings on undersides of rock fragments; strongly effervescent; strongly alkaline (pH 8.6); gradual wavy boundary. (0 to 5 inches thick)

Btnk3—18 to 30 inches; very pale brown (10YR 7/4) extremely gravelly sandy clay loam, brownish yellow (10YR 6/6) moist; massive; hard, friable, sticky and plastic; very few fine roots; common very fine and fine interstitial pores; common thin clay films bridging mineral grains; 55 percent pebbles, 10 percent cobbles; common medium soft lime masses and common coatings on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary. (0 to 12 inches thick)

Btky1—30 to 44 inches; very pale brown (10YR 7/4) extremely gravelly clay loam, brownish yellow (10YR 6/6) moist; massive; hard, friable, sticky and plastic; very few fine roots; common very fine and fine interstitial pores; common thin clay films bridging mineral grains; 55 percent pebbles, 10 percent cobbles; common medium soft lime masses and common thin coatings on undersides of rock fragments; common medium filaments of gypsum; violently effervescent; moderately alkaline (pH 8.2); gradual wavy boundary. (10 to 16 inches thick)

Btky2—44 to 60 inches; very pale brown (10YR 7/3) extremely gravelly sandy clay loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, sticky and plastic; few fine tubular pores; common thin clay films bridging mineral grains; 55 percent pebbles, 10 percent cobbles; common medium soft lime masses and common thin coatings on undersides of coarse fragments; common medium filaments of gypsum; violently effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada, south part; approximately 22 miles north of Austin, about 600

feet south and 2,300 feet east of the northwest corner of sec. 24, T. 23 N., R. 43 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Moist in winter and early spring, dry mid-May through October
Soil temperature: 47 to 53 degrees F
Depth to secondary carbonates: 5 to 12 inches
Depth to secondary gypsum: 12 to 35 inches
Depth to base of Bt horizon: 40 to more than 60 inches
Control section: Clay content—27 to 35 percent; rock fragments—35 to 60 percent
Reaction throughout the profile: Moderately alkaline to strongly alkaline

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2, 3, or 4

B horizon:
Value—5, 6, or 7 dry, 4, 5, or 6 moist
Chroma—3, 4, or 6
Structure—angular blocky; subangular blocky; massive in the lower subhorizons in some pedons
Exchangeable sodium—15 to 35 percent

Btn horizon:
Texture—very gravelly clay, very gravelly clay loam, very gravelly sandy clay
Clay content—35 to 45 percent
Rock fragments—35 to 60 percent, mainly pebbles

Btnk and Btky horizons:
Texture—extremely gravelly clay loam, extremely gravelly sandy clay loam, extremely gravelly loam, very gravelly loam, very gravelly clay loam
Clay content—20 to 30 percent, when mixed
Rock fragments—50 to 75 percent, mainly pebbles
Other features—extremely gravelly sandy loam or extremely gravelly loam below a depth of 40 inches in some pedons

Stingdorn Series

The Stingdorn series consists of shallow, well drained soils that formed in residuum of rhyolite, andesite, and tuff. Stingdorn soils are on crests and side slopes of foothills and hills. Slopes are 4 to 50 percent. Mean annual temperature is about 49 degrees, and mean annual precipitation is about 6 inches.

Taxonomic class: Loamy-skeletal, mixed, mesic, shallow Typic Durargids

Typical pedon: Stingdorn very cobbly loam, 4 to 30 percent slopes. Pebbles cover 5 percent and cobbles 40 percent of the soil surface:

A—0 to 7 inches; light brownish gray (10YR 6/2) very cobbly loam, dark brown (10YR 4/3) moist; weak thick platy structrue; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine vesicular pores; 5 percent pebbles, 40 percent cobbles; moderately alkaline (pH 8.0); clear wavy boundary. (3 to 7 inches thick)

Bt1—7 to 11 inches; light yellowish brown (10YR 6/4) very cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine and few coarse roots; common very fine and fine tubular pores; few thin clay films in pores and on faces of peds; 5 percent pebbles, 30 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary. (4 to 11 inches thick)

Bt2—11 to 15 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark yellowish brown (10YR 4/4) moist; strong fine angular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine and few coarse roots; common very fine and fine tubular pores; many moderately thick clay films in pores and on faces of peds; 5 percent indurated pan fragments; 10 percent pebbles, 30 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt irregular boundary. (0 to 4 inches thick)

Bqkm—15 to 20 inches; very pale brown (10YR 7/3) indurated duripan; pale brown (10YR 6/3) moist; several thin indurated horizontal lamella at intervals throughout strongly silica-cemented matrix; 2- to 5-millimeter-thick indurated laminar cap covers bedrock; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (0.25 inch to 5 inches thick)

R—20 inches; unweathered tuff.

Type location: Lander County, Nevada; approximately 42 miles southwest of Battle Mountain, about 1,500 feet east and 1,400 feet north of the southwest corner sec. 31, T. 26 N., R. 41 E.

Range in Characteristics

Soil moisture: Usually dry, moist for short periods in winter and spring
Soil temperature: 47 to 54 degrees F
Combined thickness of A and Bt horizons: 7 to 16 inches
Depth to indurated duripan over hard bedrock: 8 to 20 inches

A horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Consistence—soft or slightly hard dry
Reaction—mildly alkaline to strongly alkaline

Bt horizon:
Hue—10YR or 2.5Y
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4
Clay content—averages 27 to 35 percent; slightly less in some subhorizons of some pedons
Rock fragments—35 to 50 percent, mainly pebbles
Consistence—slightly hard or hard dry, very friable or friable moist
Reaction—mildly alkaline to strongly alkaline
Carbonates—slightly to strongly effervescent in some pedons; noneffervescent in the upper part of some pedons

Bqk horizon (only in some pedons):
Hue—10YR or 2.5Y
Value—6, 7, or 8 dry, 6 or 7 moist
Chroma—2 or 3
Reaction—moderately alkaline or strongly alkaline

Sumine Series

The Sumine series consists of moderately deep, well drained soils that formed in residuum and colluvium derived from quartzite, breccia, and sandstone. Sumine soils are on side slopes of mountains. Slopes are 15 to 75 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 42 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Argixerolls

Typical pedon: Sumine cobbly loam, 30 to 50 percent slopes, in an area of the Walti-Sumine-Softscrabble association. Pebbles cover 15 percent and cobbles 15 percent of the soil surface:

A1—0 to 5 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; weak medium platy structure parting to moderate fine granular; soft, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; 10 percent pebbles, 10 percent cobbles; slightly effervescent; neutral (pH 7.2); gradual smooth boundary. (2 to 5 inches thick)

A2—5 to 10 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine interstitial and common very fine tubular pores; 15 percent pebbles, 5 percent cobbles; neutral (pH 7.3); clear smooth boundary. (3 to 5 inches thick)

Bt1—10 to 13 inches; pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; common fine and very fine roots; common very fine interstitial and tubular pores; few thin clay films on faces of peds; 30 percent pebbles; neutral (pH 7.3); clear wavy boundary. (3 to 8 inches thick)

Bt2—13 to 19 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; common moderately thick clay films lining pores and on faces of peds; 35 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.6); clear wavy boundary. (5 to 15 inches thick)

Bt3—19 to 24 inches; light yellowish brown (10YR 6/4) very cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; common moderately thin clay films on faces of peds; 25 percent pebbles, 20 percent cobbles; mildly alkaline (pH 7.8); abrupt wavy boundary. (0 to 12 inches thick)

Bt4—24 to 30 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; 25 percent pebbles, 40 percent cobbles; mildly alkaline (pH 7.8); abrupt wavy boundary. (0 to 12 inches thick)

2R—30 inches; quartzite.

Type location: Lander County, Nevada; approximately 28 miles south of Battle Mountain, about 50 feet west and 1,000 feet south of the northeast corner of sec. 32, T. 26 N., R. 44 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 42 to 47 degrees F
Mollic epipedon thickness: 8 to 15 inches, may include the upper part of the Bt horizon
Depth to bedrock: 20 to 40 inches
Combined thickness of the A and Bt horizons: 20 to 40 inches
Control section: Clay content—25 to 35 percent when

mixed; texture—dominantly clay loam, thin horizons of loam or clay in some pedons; rock fragments—35 to 60 percent when averaged

Profile reaction: Neutral or mildly alkaline

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—weak or moderate, very thin to medium platy or very fine to medium granular or subangular blocky
Consistence—soft or slightly hard dry, very friable or friable moist

Bt horizon:
Hue—10YR or 7.5YR
Value—4, 5, or 6 dry, 2, 3, or 4 moist
Chroma—3 or 4
Structure—weak to strong, very fine to medium angular or subangular blocky; massive in the lower part of some pedons

Susie Creek Series

The Susie Creek series consists of deep, well drained soils that formed in residuum of some loess and volcanic ash but mainly of andesite and basalt. Susie Creek soils are on summits of plateaus. Slopes are 2 to 8 percent. Mean annual precipitation is about 11 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Fine, montmorillonitic, frigid Durargidic Argixerolls

Typical pedon: Susie Creek silt loam, 2 to 8 percent slopes, in an area of the Susie Creek-Millerlux association:

A1—0 to 4 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; mildly alkaline (pH 7.8); clear smooth boundary. (1 to 4 inches thick)

A2—4 to 9 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine and common medium roots; many very fine and fine tubular pores; 5 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (4 to 9 inches thick)

Bt1—9 to 16 inches; pale brown (10YR 6/3) silty clay, dark brown (10YR 4/3) moist; strong fine and medium subangular blocky structure; hard, firm, very sticky and very plastic; many very fine and fine and common medium roots; few fine tubular pores; common thin clay films on faces of peds; moderately alkaline (pH 8.0); clear smooth boundary. (5 to 12 inches thick)

Bt2—16 to 27 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, very firm, very sticky and very plastic; few fine and medium roots; few very fine tubular pores; continuous moderately thick clay films on faces of peds; moderately alkaline (pH 8.0); clear wavy boundary. (4 to 11 inches thick)

2Bqk1—27 to 31 inches; very pale brown (10YR 7/3) sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, very firm, slightly sticky and slightly plastic; few fine and medium roots; few very fine tubular pores; weakly silica cemented; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (5 to 20 inches thick)

2Bqk2—31 to 42 inches; white (10YR 8/2) sandy loam, very pale brown (10YR 7/3) moist; massive; hard, very firm, nonsticky and nonplastic; common very fine tubular pores; 10 percent pebbles; strongly effervescent; weakly silica cemented; roots mostly on surface of horizon and in numerous fractures; strongly alkaline (pH 8.8); abrupt smooth boundary. (0 to 20 inches thick)

3R—42 inches; basalt.

Type location: Lander County, Nevada; about 7 miles northeast of Battle Mountain, approximately 1,100 feet south and 1,200 feet west of the northeast corner of sec. 14, T. 33 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in part from October through late June

Soil temperature: 45 to 47 degrees F

Mollic epipedon thickness: 7 to 12 inches

Depth to base of Bt horizon: 20 to 30 inches

Depth to weak silica cementation: 20 to 36 inches

Depth to paralithic or lithic contact: 40 to more than 60 inches

Control section: Clay content—35 to 50 percent when mixed; texture—clay, silty clay, sandy clay, or clay loam; rock fragments—0 to 15 percent

Other features: Some pedons have a thin AB or BA horizon and common or many uncoated sand grains on faces of peds

A horizon:
Value—4 or 5 dry
Chroma—2 or 3
Structure—moderate or strong, very fine to medium granular, platy, or subangular blocky
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 to 7 dry, 4 to 6 moist
Chroma—3 or 4
Structure—moderate or strong, fine or medium prismatic or blocky
Consistence—friable to very firm moist
Reaction—mildly alkaline or moderately alkaline

2Bqk horizon:
Hue—2.5Y or 10YR
Value—6 to 8 dry, 5 to 7 moist
Chroma—2 to 4
Texture—loam, sandy loam, or loamy sand
Reaction—moderately alkaline or strongly alkaline
Cementation—continuously weakly silica cemented
Consistence—very firm or firm and brittle when moist
Other features—Bq subhorizon that is weakly silica cemented and lacks secondary carbonates in some pedons

Teguro Series

The Teguro series consists of shallow, well drained soils that formed in residuum weathered from rhyolitic tuff. Teguro soils are on side slopes of foothills and mountains. Slopes are 15 to 50 percent. Mean annual precipitation is about 14 inches, and mean annual temperature is about 45 degrees F.

Taxonomic class: Loamy, mixed, frigid Lithic Argixerolls

Typical pedon: Teguro very gravelly loam, 30 to 50 percent slopes, in an area of the Punchbowl-Teguro-Sumine association. Pebbles cover 55 percent of the soil surface:

A—0 to 4 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine vesicular pores; 35 percent pebbles; neutral (pH 6.8); abrupt smooth boundary. (1 to 4 inches thick)

Bt1—4 to 9 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many fine and few very fine and medium roots; common very fine and fine tubular and interstitial pores; common thin clay films on faces of peds and lining pores; 30 percent pebbles; neutral (pH 7.0); clear smooth boundary. (3 to 7 inches thick)

Bt2—9 to 16 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; few very fine tubular pores; common moderately thick clay films on faces of peds and lining pores; 30 percent pebbles; neutral (pH 7.2); abrupt irregular boundary; (4 to 10 inches thick)

R—16 inches; rhyolitic tuff.

Type location: Lander County, Nevada; about 14 miles southwest of Battle Mountain, approximately 2,600 feet east and 1,500 feet south of the northwest corner of sec. 2, T. 31 N., R. 42 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry mid-July through early October
Soil temperature: 43 to 47 degrees F
Mollic epipedon: 7 to 12 inches thick, includes upper part of Bt horizon
Thickness of A and Bt horizons and depth to bedrock: 14 to 20 inches
Control section: Clay content—25 to 35 percent; rock fragments—15 to 35 percent, mainly pebbles
Reaction throughout the profile: Slightly acid or neutral

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry and moist
Texture—gravelly loam or gravelly clay loam

Teman Series

The Teman series consists of very deep, moderately well drained soils that formed in silty alluvium derived from mixed rock sources that are mostly of volcanic origin and high in content of pyroclastics material. Teman soils are on inset fans and fan skirts. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-silty, mixed, mesic Durixerollic Calciorthids

Typical pedon: Teman silt loam:

A1—0 to 4 inches; light brownish gray (2.5Y 6/2) silt loam, dark brown (10YR 3/3) moist; moderate very thin and thin platy structure; slightly hard, very friable, slightly sticky and plastic; few very fine roots; many very fine vesicular, interstitial, and tubular pores; strongly effervescent; moderately

alkaline (pH 8.2); clear smooth boundary. (3 to 5 inches thick)

A2—4 to 8 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium and coarse prismatic structure; slightly hard, very friable, sticky and plastic; common very fine and few fine and medium roots; common very fine tubular pores; common fine filaments of gypsum crystals; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (4 to 9 inches thick)

Bq1—8 to 21 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, sticky and plastic; many very fine and few fine and medium roots; common very fine tubular pores; few fine filaments of gypsum crystals; strong durinodes; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (7 to 19 inches thick)

Bq2—21 to 29 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 5/3) moist; massive; hard, very friable, sticky and plastic; few very fine and fine roots; many very fine tubular pores; few fine filaments of gypsum crystals; 30 percent 5- to 20-millimeter, weak and moderately strong durinodes; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (5 to 8 inches thick)

Bqk—29 to 48 inches; white (10YR 8/2) silty clay loam, very pale brown (10YR 7/3) moist; common fine distinct light yellowish brown (10YR 6/4 moist) and yellowish brown (10YR 5/6 moist) mottles; massive; hard, very friable, sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; 25 percent 5- to 20-millimeter, weak and moderately strong durinodes and lime concretions; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (8 to 22 inches thick)

Bk—48 to 63 inches; mottled light gray (10YR 7/2) and white (10YR 8/2) silty clay loam, very pale brown (10YR 7/3) and white (10YR 8/2) moist; common fine distinct yellowish brown (10YR 5/4 moist) and dark yellowish brown (10YR 4/4 moist) mottles; massive; hard, friable, sticky and plastic; few very fine roots; many very fine and fine tubular pores; violently effervescent; common medium segregated lime concretions; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; approximately 8 miles south of Battle Mountain, about 2,250 feet south and 1,000 feet east of the approximate northwest corner of sec. 27, T. 31 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in part from October through early June

Soil temperature: 47 to 53 degrees F

Depth to calcic horizon: 20 to 37

Depth to Bq horizon: 8 to 14 inches

Control section: Clay content—20 to 30 percent when mixed; texture—silt loam or silty clay loam; sand fraction and rock fragments—less than 15 percent fine sand and coarser, as much as 10 percent gravel below a depth of 40 inches in some pedons

Calcic horizon: 12 or more inches thick; 15 to 40 percent calcium carbonate equivalent and 5 to 30 percent 3- to 5-millimeter carbonate concretions

Profile reaction: Moderately alkaline or strongly alkaline, generally becoming more alkaline with depth

Salts and sodium: Normally strongly salt and slightly sodium affected below a depth of 8 inches and slightly affected above; strongly salt and moderately sodium affected throughout the profile in some pedons

Consistence: Slightly sticky or sticky wet

Gypsum: Segregated gypsum crystals at any depth below 3 inches

A horizon:

Hue—2.5Y or 10YR
Value—3 to 5 moist
Chroma—2 to 4
Structure—very thin to thick platy or very fine to coarse prismatic; massive in some pedons

Bq and Bk horizons:

Value—6 to 8 dry, 4 to 8 moist, light values in the lower subhorizons
Chroma—1 to 3 dry, 2 to 4 moist
Cementation—20 to 50 percent weak and moderately strong durinodes; strata of up to 50 percent weak discontinuous silica cementation in some pedons
Other features—strata of volcanic ash at a depth of 16 to 30 inches, 4 to 8 inches thick in some pedons

Tenabo Series

The Tenabo series consists of shallow, well drained soils that formed in a thin mantle of loess and volcanic ash over alluvium derived from mixed rocks. Tenabo soils are on fan piedmonts. Slopes are 0 to 15 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Typic Nadurargids

Typical pedon: Tenabo silt loam, 0 to 2 percent slopes, in an area of Beoska-Tenabo silt loams, nearly level:

A1—0 to 7 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine random and few fine oblique roots; many very fine vesicular pores; 5 percent small pebbles; moderately alkaline (pH 8.4); clear wavy boundary. (0 to 7 inches thick)

A2—7 to 13 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; massive; hard, very friable, sticky and plastic; common very fine and fine random and very few medium and coarse oblique roots; common very fine vesicular and tubular and few fine tubular pores; 5 percent small pebbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (1 to 8 inches thick)

Btn1—13 to 17 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate very fine and fine angular blocky; slightly hard, very friable, sticky and plastic; common very fine random roots; common very fine interstitial and tubular pores; common thin clay films on faces of peds and lining pores; 10 percent small pebbles; strongly alkaline (pH 8.6); clear smooth boundary. (1 to 4 inches thick)

Btn2—17 to 20 inches; very pale brown (10YR 7/3) gravelly silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate fine angular blocky; slightly hard, very friable, sticky and plastic; few very fine random and very few fine horizontal roots; common very fine interstitial and tubular pores; many thin clay films on faces of peds and lining pores; 20 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (3 to 8 inches thick)

2Bqkm1—20 to 24 inches; light yellowish brown (10YR 6/4) indurated duripan, dark yellowish brown (10YR 4/4) moist; common fine distinct reddish yellow (7.5YR 7/6 moist) and strong brown (7.5YR 5/6 moist) mottles; massive; very hard, very firm; very few very fine roots in fractures; few very fine tubular pores; continuous 1/16- to 1/8-inch-thick very pale brown (10YR 8/3 and 7/3 moist) silica laminae; about 30 percent small, rounded pebbles; strongly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (4 to 19 inches thick)

2Bqkm2—24 to 39 inches; very pale brown (10YR 7/3) strongly silica-cemented duripan, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm; few very fine roots in fractures; many very fine interstitial pores; 1- to 3-inch-thick silica laminae lenses throughout; 70 percent rounded pebbles as much as ½ inch in diameter; strongly effervescent; strongly alkaline (pH 8.4); gradual smooth boundary. (0 to 5 inches thick)

2C—39 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loamy sand, dark yellowish brown (10YR 4/3) moist; single grained; loose, nonsticky and nonplastic; few very fine random roots; many very fine interstitial pores; a few discontinuous silica- and lime-cemented lenses; 75 percent rounded pebbles as much as 1½ inches in diameter; slightly effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; about 50 miles southwest of Battle Mountain, approximately 1,320 feet west and 25 feet north of the southeast corner of sec. 27, T. 25 N., R. 42 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 51 degrees F
Depth to duripan: 9 to 20 inches
Control section: Clay content—27 to 35 percent; rock fragments—less than 20 percent when mixed
Reaction throughout the profile: Moderately or strongly alkaline in the A and Btn horizons and moderately to very strongly alkaline below the Btn horizon
Other features: In areas subject to recharge with lime, noneffervescent at the surface to violently effervescent in the layer above the duripan

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—weak or moderate, very thin to thick platy; massive in some pedons

Bt (where present) and Btn horizons:
- Value—5 to 7 dry, 4 or 5 moist
- Chroma—3, 4, or 6
- Texture of fine earth—clay loam, silty clay loam, sandy clay loam and thin strata of silt loam in some pedons
- Rock fragments—less than 20 percent, mainly pebbles, may include some duripan fragments
- Structure—moderate fine or medium prismatic; angular blocky; or subangular blocky
- Reaction—moderately alkaline or strongly alkaline, generally becoming more alkaline with depth
- Exchangeable sodium—15 to 30 percent
- Carbonates—the lower subhorizons of some pedons are violently effervescent and contain segregated lime

Bqkm horizon:
- Value—6 to 8 dry, 4 to 7 moist
- Chroma—2 to 4

Other features—very hard to extremely hard continuous laminae stratified with strongly cemented materials

2C horizon:
Texture—gravelly to extremely gravelly sand, loamy sand, or sandy loam
Rock fragments—15 to 85 percent, mainly pebbles

Tessfive Series

The Tessfive series consists of shallow, well drained soils formed in residuum of some loess but mainly of tuffaceous sediments. Tessfive soils are on crests and side slopes of rolling hills. Slopes are 8 to 30 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy, mixed (calcareous), mesic Lithic Xeric Torriorthents

Typical pedon: Tessfive gravelly loam, 8 to 30 percent slopes, in an area of the Tessfive-Puett-Grina association. Pebbles cover approximately 35 percent of the soil surface:

A1—0 to 3 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; soft, very friable, sticky and plastic; few very fine roots; common very fine vesicular pores; 20 percent pebbles; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 5 inches thick)

A2—3 to 6 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; soft, very friable, slightly sticky and plastic; common very fine roots; common very fine interstitial pores; 20 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 3 inches thick)

Bk1—6 to 10 inches; light brownish gray (10YR 6/2) gravelly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; few very fine tubular pores; few fine lime filaments or threads and lime coatings on undersides of rock fragments; 20 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); gradual wavy boundary. (0 to 6 inches thick)

Bk2—10 to 16 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; few very fine tubular pores; few fine and medium lime filaments or threads and lime coatings on undersides of rock fragments; 25 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary. (3 to 6 inches thick)

R—16 to 20 inches; hard, fractured consolidated tuffaceous sediments; lime coatings on rock fragments.

Type location: Lander County, Nevada; about 23 miles north of Austin in an unsectionized area, approximately 10,000 feet south and 4,250 feet west of the southwest corner of sec. 27, T. 24 N., R. 43 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to bedrock: 10 to 20 inches
Control section: Clay content—14 to 24 percent; texture—loam or sandy loam; rock fragments—20 to 35 percent, mainly pebbles
Carbonates: 5 to 15 percent
Calcium carbonate equivalent: A1 horizon leached of carbonates in some pedons
Reaction throughout the profile: Moderately alkaline or strongly alkaline
Other features: Highly weathered paralithic material in the upper few inches of bedrock in some pedons

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

Bk horizon:
Value—6, 7, or 8 dry, 4, 5, or 6 moist
Chroma—2 to 6
Structure—subangular blocky; massive in some pedons
Other features—up to 15 percent weakly cemented durinodes in the lower subhorizons of some pedons

Tomera Series

The Tomera series consists of very deep, well drained soils that formed in mixed alluvium derived from sedimentary rocks and pyroclastic materials. Tomera soils are on fan piedmonts. Slopes are 8 to 15 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Natrargids

Typical pedon: Tomera gravelly loam, 8 to 15 percent slopes, in an area of the Beowawe Variant-Tomera-Whirlo association:

A1—0 to 3 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak thin platy

structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 15 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (1 to 5 inches thick)

A2—3 to 8 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine tubular and few very fine vesicular pores; 15 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 6 inches thick)

Bt—8 to 16 inches; yellowish brown (10YR 5/4) clay, dark brown (10YR 4/3) moist; moderate medium prismatic structure; very hard, very firm, very sticky and very plastic; few very fine roots; common very fine tubular pores; common moderately thick clay films on faces of peds and lining pores; 10 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary. (5 to 12 inches thick)

Btnk1—16 to 27 inches; yellowish brown (10YR 5/4) gravelly sandy clay, dark yellowish brown (10YR 4/4) moist; weak fine prismatic structure parting to moderate fine subangular blocky; hard, firm, sticky and plastic; few very fine and fine roots; common very fine tubular pores; common thin clay films on faces of peds; 30 percent pebbles; common fine lime filaments and soft masses; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (6 to 14 inches thick)

Btnk2—27 to 33 inches; yellowish brown (10YR 5/4) gravelly sandy clay, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; few thin clay films on faces of peds; 30 percent pebbles; few fine soft lime masses; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (0 to 10 inches thick)

2Bk—33 to 60 inches; very pale brown (10YR 7/3) very gravelly loamy sand, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 55 percent pebbles with thin (less than 1 millimeter) lime coatings on the undersides; violently effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; about 15 miles south of Battle Mountain, approximately 1,000 feet south and 750 feet west of the northeast corner of sec. 6, T. 29 N., R. 45 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry mid-June through October

Soil temperature: 47 to 50 degrees F

Depth to lime: 15 to 30 inches

Depth to base of Btnk horizon: 30 to 42 inches

Control section: Clay content—40 to 60 percent; rock fragments—10 to 30 percent

Reaction throughout the profile: Neutral to strongly alkaline, becoming more alkaline with depth

Other features: Thin clay loam AB horizon above the Bt horizon in some pedons

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—2 to 3
- Structure—weak or moderate thin to thick platy

Bt and Btnk horizons:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—2 to 4
- Texture—clay, gravelly clay, sandy clay, or gravelly sandy clay in the uppermost 20 inches; clay loam, gravelly clay loam, sandy clay loam, or gravelly sandy clay in the lower part
- Structure—upper part, weak or moderate fine or medium prismatic; lower part, prismatic or weak or moderate, fine or medium subangular or angular blocky
- Reaction—neutral to moderately alkaline in the upper part becoming moderately or strongly alkaline in the lower part
- Other features—nonsaline or slightly saline
- Exchangable sodium—1 to 10 percent in the upper subhorizon and 15 to 30 percent in the lower subhorizon

2C (where present) or 2Bk horizon or both:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Texture—very gravelly loamy sand, extremely gravelly sandy loam, very cobbly loam
- Rock fragments—5 to 25 percent cobbles, 25 to 70 percent pebbles

Trunk Series

The Trunk series consists of moderately deep, well drained soils that formed in residuum and colluvium derived from andesite, rhyolite, chert, and quartzite. Trunk soils are on crests and convex side slopes of mountains and foothills. Slopes are 4 to 50 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Haplargids

Typical pedon: Trunk cobbly loam, 30 to 50 percent slopes, in an area of the Trunk-Burrita-Rock outcrop association. Pebbles cover 15 percent and cobbles 10 percent of the soil surface:

A—0 to 5 inches; pale brown (10YR 6/3) cobbly loam, dark brown (10YR 4/3) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine interstitial pores; 10 percent pebbles, 15 percent cobbles; mildly alkaline (pH 7.6); clear smooth boundary. (3 to 6 inches thick)

Bt—5 to 11 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong very fine subangular blocky structure; hard, firm, sticky and plastic; common very fine, fine, and medium roots; common very fine and fine interstitial pores; few thin clay films on faces of peds; 15 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary. (6 to 12 inches thick)

Btk1—11 to 17 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong fine prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine, fine, and coarse roots; common very fine and fine tubular pores; many moderately thick clay films lining pores and on faces of peds; 15 percent pebbles, 5 percent cobbles; common fine lime filaments and seams; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary. (4 to 12 inches thick)

Btk2—17 to 28 inches; light yellowish brown (10YR 6/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine, fine, and coarse roots; common very fine and fine tubular pores; many moderately thick clay films lining pores and on faces of peds; 15 percent pebbles, 5 percent cobbles; common fine lime filaments and seams; violently effervescent; moderately alkaline (pH 8.4); clear irregular boundary. (6 to 12 inches thick)

2R—28 inches; fractured andesite; lime coatings on fracture planes.

Type location: Lander County, Nevada; about 31 miles southwest of Battle Mountain, approximately 2,500 feet west and 1,250 feet south of the northeast corner of sec. 21, T. 26 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry, moist in late fall, winter, and early spring
Soil temperature: 48 to 53 degrees
Depth to bedrock: 20 to 40 inches
Depth to lime: 10 to 20 inches

A horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—2 or 3
Reaction—neutral or mildly alkaline

Bt and Btk horizons:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4
Texture—gravelly clay loam or gravelly clay that is more than 30 percent sand
Clay content—35 to 50 percent
Rock fragments—15 to 35 percent, mainly pebbles
Reaction—neutral or mildly alkaline in noncalcareous upper subhorizon, moderately or strongly alkaline in calcareous lower subhorizon

Tulase Series

The Tulase series consists of very deep, well drained soils that formed in silty alluvium of mixed rock sources, loess, and volcanic ash. Tulase soils are in lagoons and on inset fans and fan skirts. Slopes are 0 to 8 percent. Mean annual precipitation is about 10 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-silty, mixed (calcareous), mesic Durorthidic Xeric Torriorthents

Typical pedon: Tulase silt loam, 2 to 8 percent slopes, in an area of the Tulase-Bubus-McConnel association:

A1—0 to 2 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary. (2 to 10 inches thick)

A2—2 to 6 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; common very fine and fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (0 to 10 inches thick)

C—6 to 11 inches; very pale brown (10YR 7/3) very fine

sandy loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (5 to 13 inches thick)

Cq—11 to 21 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; 30 percent 10- to 25-millimeter, strong durinodes; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (6 to 13 inches thick)

Cqk1—21 to 36 inches; very pale brown (10YR 7/3) very fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine tubular pores; 45 percent 10- to 25-millimeter, strong durinodes; 20 percent weak discontinuous silica cementation; common fine lime filaments; violently effervescent; strongly alkaline (pH 9.0); gradual wavy boundary. (9 to 18 inches thick)

Cqk2—36 to 60 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine tubular pores; 30 percent 10- to 20-millimeter, strong durinodes; 10 percent weak discontinuous silica cementation; common fine lime filaments; violently effervescent; strongly alkaline (pH 9.0).

Type location: Lander County, Nevada; about 28 miles southeast of Battle Mountain, approximately 2,500 feet east and 100 feet north of the southwest corner of sec. 18, T. 26 N., R. 48 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from late June through October

Soil temperature: 47 to 52 degrees F

Depth to Cq horizon: 11 to 20 inches

A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

C horizon:

Value—4 or 5 moist

Cq and Cqk horizons:

Texture—silt loam or very fine sandy loam

Silica cementation—20 to 50 percent durinodes; up to 30 percent discontinuous silica-lime cementation in Cqk horizon in most pedons

Tusel Series

The Tusel series consists of deep, well drained soils that formed in some loess that contains high amounts of pyroclastic material but mainly in residuum and colluvium weathered from quartzite, welded tuff, conglomerate, chert, and shale. Tusel soils are on side slopes of mountains. Slopes are 30 to 50 percent. Mean annual precipitation is about 17 inches, and mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy-skeletal, mixed Argic Pachic Cryoborolls

Typical pedon: Tusel very gravelly loam, 30 to 50 percent slopes, in an area of the Hapgood-Tusel-Winada association:

A1—0 to 8 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine vesicular and few very fine tubular pores; 30 percent pebbles, 5 percent cobbles; neutral (pH 6.6); clear smooth boundary. (2 to 10 inches thick)

A2—8 to 20 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 30 percent pebbles, 5 percent cobbles; neutral (pH 6.7); clear smooth boundary. (7 to 14 inches thick)

2Bt—20 to 42 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots and common very fine tubular pores; 40 percent pebbles, 20 percent cobbles; few thin clay films on faces of peds; neutral (pH 7.0); abrupt wavy boundary. (12 to 27 inches thick)

3R—42 inches; quartzite.

Type location: Lander County, Nevada; approximately 19 miles south of Battle Mountain, about 750 feet north and 2,500 feet west of the southeast corner of sec. 35, T. 29 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually moist in late fall through early summer, dry from late July through September

Soil temperature: 43 to 47 degrees F

Average summer soil temperature: 58 to 59 degrees F

Mollic epipedon thickness: 16 to 20 inches, includes the upper part of the argillic horizon in some pedons

Depth to base of Bt horizon: 36 to more than 50 inches

Depth to bedrock: 40 to more than 80 inches
Control section: Clay content—25 to 35 percent; rock fragments—50 to 75 percent, mainly pebbles
Profile reaction: Slightly acid or neutral

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—weak to strong, very fine to medium granular or subangular blocky
Consistence—soft or slightly hard dry

2Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2, 3, or 4
Texture—very gravelly or extremely gravelly sandy clay loam or very gravelly or extremely gravelly clay loam that is 40 to 60 percent sand
Clay content—25 to 35 percent when averaged
Rock fragments—40 to 60 percent pebbles and 10 to 25 percent cobbles
Structure—weak to strong subangular blocky or angular blocky; lower subhorizons massive in some pedons

Tweba Series

The Tweba series consists of very deep, very poorly drained soils that formed in loamy alluvium derived from mixed rock sources. Tweba soils are on flood plains. Slopes are 0 to 4 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Aeric Fluvaquents

Typical pedon: Tweba very fine sandy loam, 0 to 4 percent slopes, in an area of the Wendane-Tweba association:

A1—0 to 2 inch; grayish brown (10YR 5/2) very fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate very thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine roots; many very fine vesicular pores; mildly alkaline (pH 7.8); clear smooth boundary. (1 to 7 inches thick)

A2—2 to 5 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine roots; common very fine tubular pores; strongly effervescent; common fine lime filaments; few manganese coatings on faces of peds; moderately alkaline (pH 8.8); clear smooth boundary. (0 to 7 inches thick)

Ck1—5 to 11 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine roots; common very fine tubular pores; strongly effervescent; common fine lime filaments; few manganese coatings on faces of peds; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 8 inches thick)

Ck2—11 to 21 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine roots; common very fine tubular pores; strongly effervescent; few fine lime filaments; 5 percent durinodes; few manganese coatings on faces of peds; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 10 inches thick)

C1—21 to 29 inches; light brownish gray (10YR 6/2) loamy sand, dark grayish brown (10YR 4/2) moist; few fine yellowish red (5YR 5/6) mottles; massive; loose, nonsticky and nonplastic; few very fine roots; many fine interstitial pores; slightly effervescent; 10 percent durinodes; moderately alkaline (pH 8.2); clear smooth boundary. (4 to 12 inches thick)

C2—29 to 35 inches; light brownish gray (10YR 6/2) sandy loam, dark grayish brown (10YR 4/2) moist; few fine yellowish red (5YR 5/6) mottles; massive; slighty hard, very friable, nonsticky and nonplastic; few very fine roots; common fine tubular pores; strongly effervescent; 10 percent durinodes; moderately alkaline (pH 8.2); clear smooth boundary. (5 to 10 inches thick)

Ck'—35 to 60 inches; light brownish gray (10YR 6/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; common fine yellowish red (5YR 5/6) mottles; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; common fine tubular pores; strongly effervescent; common fine lime filaments; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; about 20 miles northeast of Battle Mountain, approximately 120 feet north and 700 feet west of the southeast corner of sec. 17, T. 35 N., R. 47 E.

Range in Characteristics

Soil moisture: Dry in midsummer and early fall, moist in late fall, winter, spring, and early summer; apparent seasonal high water table at a depth of 14 to 20 inches for some time during most years, usually February through June; drained phases recognized
Soil temperature: 47 to 52 degrees F
Control section: Clay content—10 to 18 percent when mixed; texture—averages fine sandy loam or very fine sandy loam, but includes stratified very fine

sandy loam, fine sandy loam, loam, or silt loam in the upper subhorizon and very fine sandy loam, fine sandy loam, sandy loam, loamy fine sand, or loamy sand in the lower subhorizon; loamy fine sand and loamy sand more common below a depth of 35 inches

Other features: One or more buried A horizons that have hue of 10YR or 5Y, value of 5 or 6 dry and 3 moist, and chroma of 1 or 2 below a depth of 30 inches in some pedons

A horizon:
Hue—2.5Y or 10YR
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 or 3
Structure—very fine angular blocky or very thin platy structure; massive in some pedons
Reaction—mildly alkaline to strongly alkaline
Effervescence—noneffervescent to strongly effervescent

C horizon:
Hue—2.5Y or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—1, 2, or 3 dry, 2 or 3 moist
Reaction—mildly alkaline to very strongly alkaline
Effervescence—slightly to strongly effervescent to a depth of 30 to 45 inches and noneffervescent to strongly effervescent below

This pedon is a taxadjunct to the series because it has lime filaments in the lower part of the soil profile. The Tweba series lacks visible secondary lime in the profile. Use and management are the same.

Umberland Series

The Umberland Series consists of very deep, somewhat poorly drained soils that formed in silty lacustrine sediments derived from mixed rock sources. Umberland soils are on lake plains, alluvial flats, and lake plain terrace remnants. Slopes are 0 to 2 percent. Mean annual precipitation is about 6 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine, montmorillonitic (calcareous), mesic Aeric Halaquepts

Typical pedon: Umberland silt loam, occasionally flooded, in an area of the Skullwak-Umberland-Wendane association:

A—0 to 4 inches; light gray (10YR 7/2) silt loam, dark brown (10YR 4/3) moist; massive; hard, friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; strongly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary. (1 to 4 inches thick)

C1—4 to 12 inches; very pale brown (10YR 7/3) silty clay loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure parting to moderate fine angular blocky; slightly hard, very friable, very sticky and very plastic; common very fine and fine roots; many very fine interstitial pores; strongly effervescent; very strongly alkaline (pH 9.6); clear smooth boundary. (2 to 8 inches thick)

C2—12 to 19 inches; light gray (5Y 7/2) silty clay, olive (5Y 5/4) moist; few medium faint dark brown (7.5YR 4/4 moist) mottles; moderate fine angular blocky structure; slightly hard, very friable, very sticky and very plastic; few fine and medium roots; common very fine tubular and interstitial pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (6 to 24 inches thick)

C3—19 to 31 inches; light gray (5Y 7/2) silty clay loam, olive (5Y 5/3) moist; common medium prominent dark brown (7.5YR 4/4 moist) mottles; moderate fine angular blocky structure; slightly hard, very friable, very sticky and very plastic; few fine roots; common very fine tubular and interstitial pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (0 to 18 inches thick)

Ck—31 to 60 inches; olive (5Y 5/3) silty clay, olive gray (5Y 5/2) moist; common medium prominent dark brown (7.5YR 4/4 moist) mottles; massive; slightly hard, friable, very sticky and very plastic; very few fine roots; few very fine tubular pores; strongly effervescent; few fine lime concretions; strongly alkaline (pH 8.8).

Type location: Lander County, Nevada; 30 miles south of Battle Mountain, in an unsectioned area, approximately 2,100 feet west and 2,100 feet south of the assumed northeast corner of sec. 34, T. 24 N., R. 47 E.

Range in Characteristics

Soil moisture: Saturated in some horizon at a depth of 20 to 40 inches for at least a month during most years and the capillary fringe moistens the soil to within 6 inches of the surface

Soil temperature: 47 to 52 degrees F

Secondary carbonates: Concretions or nodules at a depth of 15 to 35 inches

Control section: Clay content—35 to 50 percent; texture—silty clay loam or silty clay, strata of clay in some pedons

Salt and sodium: Strongly saline-alkali in the upper part of the profile, concentrations generally decreasing with depth

A horizon:
Hue—10YR, 2.5Y, or 5Y
Value—6, 7, or 8 dry, 4, 5, or 6 moist
Chroma—2, 3, or 4
Structure—strong very fine or fine granular (due to flocculation); massive in some pedons

C horizon:
Hue—2.5Y or 5Y
Value—6, 7, or 8 dry, 4, 5, or 6 moist
Chroma—2, 3, or 4
Reaction—strongly alkaline or very strongly alkaline, usually becoming less alkaline with depth

Unsel Variant

The Unsel Variant consists of moderately deep, well drained soils that formed in residuum and colluvium weathered from tuffaceous sediments. Unsel Variant soils are on side slopes of fan piedmonts underlain by tertiary sediments. Slopes are 30 to 50 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Duric Haplargids

Typical pedon: Unsel Variant very gravelly loam, 30 to 50 percent slopes, in an area of the Grassval-Grina-Unsel Variant association. Pebbles cover about 45 percent and cobbles 15 percent of the soil surface:

A—0 to 2 inches; light gray (10YR 7/2) very gravelly loam, brown (10YR 5/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and nonplastic; few fine roots; common very fine and few fine vesicular pores; 40 percent pebbles; moderately alkaline (pH 8.2); abrupt smooth boundary. (2 to 4 inches thick)

BA—2 to 4 inches; light gray (10YR 7/2) very gravelly clay loam, brown (10YR 5/3) moist; strong thin platy structure; slightly hard, friable, sticky and plastic; few fine and very fine roots; common fine vesicular and few very fine tubular pores; 30 percent pebbles, 10 percent cobbles; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 4 inches thick)

Bt—4 to 11 inches; pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 4/3) moist; common white (10YR 8/2) bleached faces of peds concentrated in the lower part; strong medium angular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; common thin and moderately thick clay films on peds; 20 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (5 to 13 inches thick)

Btk—11 to 15 inches; very pale brown (10YR 7/3) gravelly clay loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; many thin and common moderately thick clay films on peds; 25 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary. (4 to 10 inches thick)

Bqk—15 to 22 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; 30 percent medium durinodes; few thin silica pendants on undersides of rock fragments; 25 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary. (6 to 12 inches thick)

Cr—22 to 46 inches; soft tuff.

Type location: Lander County, Nevada; approximately 36 miles south of Battle Mountain, about 300 feet south and 1,400 feet west of the northeast corner of sec. 22, T. 26 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to soft bedrock: 20 to 40 inches
Control section: Clay content—27 to 35 percent; rock fragments—20 to 30 percent when mixed, mainly pebbles
Reaction throughout the profile: Moderately alkaline to very strongly alkaline, becoming more alkaline with depth

A horizon:
Hue—10YR or 2.5Y
Chroma—2 to 4

Bt horizon:
Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 to 4
Exchangeable sodium—less than 5 percent in the Bt horizon, 5 to 15 percent in the Btk horizon

Bqk horizon:
Hue—10YR or 2.5Y
Value—6 to 8 dry, 5 or 6 moist
Chroma—2 to 4
Texture—loam or sandy loam
Rock fragments—20 to 35 percent when mixed, mainly pebbles
Cementation—20 to 50 percent durinodes or weak discontinuous silica cementation

Valmy Series

The Valmy series consists of very deep, well drained soils that formed in a thin loess cap that contains high amounts of volcanic ash and that overlies loamy alluvium. Valmy soils are on inset fans and fan skirts. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 51 degrees F.

Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents

Typical pedon: Valmy very fine sandy loam, silty substratum, 0 to 2 percent slopes, in an area of the Batan-Wendane-Valmy association:

A1—0 to 3 inches; light brownish gray (10YR 6/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; many very fine vesicular pores; 5 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 4 inches thick)

A2—3 to 6 inches; light brownish gray (10YR 6/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common very fine tubular pores; 5 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (0 to 4 inches thick)

C—6 to 18 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; common fine roots; few fine tubular pores; 10 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.2); gradual wavy boundary. (6 to 12 inches thick)

Cqk—18 to 29 inches; pale brown (10YR 6/3) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; common fine roots; few very fine tubular pores; 40 percent 3- to 30-millimeter, hard, firm durinodes; 5 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.4); gradual wavy boundary. (8 to 14 inches thick)

Ck—29 to 46 inches; light yellowish brown (2.5Y 6/4) fine sandy loam, light olive brown (2.5Y 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; common fine roots; few very fine tubular pores; 5 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.2); clear wavy boundary. (7 to 17 inches thick)

2Cqk—46 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam, olive brown (2.5Y 4/4) moist; massive; hard, firm, sticky and plastic; few very fine tubular pores; 90 percent weak discontinuous cementation; strongly effervescent; strongly alkaline (pH 8.4).

Type location: Lander County, Nevada; about 33 miles southeast of Battle Mountain, approximately 2,300 feet north and 300 feet west of the southeast corner of sec. 7, T. 27 N., R. 48 E.

Range in Characteristics

Soil moisture: Usually dry, moist for short periods in winter and spring

Soil temperature: 47 to 53 degrees F

Depth to Cq horizon: 8 to 20 inches

Durinodes: 5 to 85 percent by volume in any one horizon, but one or more horizons more than 6 inches thick contain more than 25 percent

Depth to unconformable material: 30 to 50 inches, but in some pedons more than 50 inches to sandy material

Control section: Texture—mainly fine sandy loam or sandy loam, but includes strata of very fine sandy loam or coarse sandy loam in some pedons; clay content—5 to 15 percent; rock fragments—0 to 30 percent, mainly pebbles

A horizon:
- Hue—10YR or 2.5Y
- Value—5 or 6 dry, 3 or 4 moist
- Reaction—Moderately alkaline or strongly alkaline

C horizon:
- Hue—10YR or 2.5Y
- Value—5 to 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Consistence—hard to extremely hard, firm or very firm and brittle
- Reaction—strongly alkaline or very strongly alkaline
- Carbonates—effervescent to violently effervescent

2C horizon:
- Texture—gravelly sand or very gravelly sand, silty clay loam below a depth of 40 inches in substratum phases
- Clay content—1 to 5 percent
- Rock fragments—20 to 55 percent
- Reaction—Strongly or very strongly alkaline

Vanwyper Series

The Vanwyper series consists of moderately deep, well drained soils that formed in residuum and colluvium weathered from sedimentary and volcanic rock sources. Vanwyper soils are on side slopes of mountains. Slopes

are 15 to 50 percent. Mean annual precipitation is about 10 inches, and mean annual temperature is about 45 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Xerollic Haplargids

Typical pedon: Vanwyper cobbly loam, 15 to 50 percent slopes, in an area of the Vanwyper-Trunk-Trunk, steep, association. Pebbles cover 10 percent and cobbles 10 percent of the soil surface:

A1—0 to 2 inches; light brownish gray (10YR 6/2) cobbly loam, dark grayish brown (10YR 4/2) moist; weak very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine vesicular pores; 5 percent pebbles, 15 percent cobbles; mildly alkaline (pH 7.6); clear smooth boundary. (1 to 5 inches thick)

A2—2 to 7 inches; pale brown (10YR 6/3) cobbly loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; soft, very friable, sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; 5 percent pebbles, 10 percent cobbles; common thin clay films on faces of peds and lining pores; mildly alklaine (pH 7.7); gradual smooth boundary. (4 to 8 inches thick)

Bt1—7 to 9 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and few fine roots; common very fine tubular pores; common thin clay films on peds and lining pores; 10 percent pebbles, 30 percent cobbles; mildly alkaline (pH 7.8); abrupt smooth boundary. (0 to 8 inches thick)

Bt2—9 to 18 inches; light yellowish brown (10YR 6/4) very cobbly clay, yellowish brown (10YR 5/4) moist; moderate fine prismatic structure parting to moderate fine subangular blocky; hard, firm, sticky and plastic; common very fine and few fine roots; common very fine tubular pores; many moderately thick clay films on faces of peds, lining pores, and coating rock fragments; few fine lime coatings on underside of coarse fragments; 10 percent pebbles 35 percent cobbles; mildly alkaline (pH 7.8); clear smooth boundary. (6 to 20 inches thick)

Bt3—18 to 22 inches; light yellowish brown (10YR 6/4) very cobbly clay, yellowish brown (10YR 5/4) moist; moderate fine prismatic structure parting to moderate fine subangular blocky; hard, firm, sticky and plastic; common very fine and fine and few medium roots; few tubular pores; many moderately thick clay films on faces of peds, lining pores, and coating rock fragments; few fine lime coatings on undersides of coarse fragments; 10 percent pebbles, 35 percent cobbles; slightly effervescent; mildly alkaline (pH 7.8); abrupt wavy boundary. (0 to 12 inches thick)

2R—22 inches; fractured rhyolite.

Type location: Lander County, Nevada; about 23 miles north of Battle Mountain, approximately 2,200 feet north and 2,400 feet east of the southwest corner of sec. 35, T. 36 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 47 to 50 degrees F
Solum thickness and depth to bedrock: 20 to 40 inches
Control section: Texture—very cobbly clay loam and very cobbly clay; clay content—35 to 55 percent; rock fragments—36 to 60 percent dominated by cobbles
Reaction throughout the profile: Neutral or mildly alkaline

A horizon:
Value—3 or 4 moist
Chroma—2, 3, or 4
Structure—weak to strong, very thin to medium platy or very fine to medium subangular blocky

Bt horizon:
Hue—10YR, 7.5YR, or 5YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 or 4
Structure—angular or subangular blocky in the upper part, prismatic in the lower part
Other features—a thin coating of carbonates on the undersides of rock fragments in some pedons

Veta Series

The Veta series consists of very deep, well drained soils that formed in alluvium of mixed rock sources. Veta soils are on inset fans. Slopes are 0 to 8 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 50 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Xerollic Camborthids

Typical pedon: Veta very gravelly fine sandy loam, 2 to 8 percent slopes, in an area of the Oxcorel-Rednik-Veta association. Pebbles cover 25 percent and cobbles 5 percent of the soil surface:

A—0 to 4 inches; light brownish gray (10YR 6/2) very gravelly fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate thin and medium platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine

vesicular and few fine tubular pores; 35 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 9 inches thick)

Bw1—4 to 11 inches; light yellowish brown (10YR 6/4) very gravelly loam, brown (10YR 4/3) moist; moderate very fine and fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and few fine tubular pores; 50 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary. (6 to 16 inches thick)

Bw2—11 to 20 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine and medium roots; common very fine tubular pores; 70 percent pebbles, 10 percent cobbles; slightly effervescent in spots; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 10 inches thick)

C—20 to 30 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; 65 percent pebbles, 10 percent cobbles; moderately alkaline (pH 8.2); clear smooth boundary. (8 to 24 inches thick)

Ck1—30 to 36 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, brown (10YR 4/3) moist; massive; slightly hard, firm, slightly sticky and slightly plastic; many very fine and common fine tubular pores; 55 percent pebbles; thin (less than 2 millimeter) lime coatings on undersides of rock fragments; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (0 to 10 inches thick)

Ck2—36 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine interstitial pores; 65 percent pebbles, 10 percent cobbles; thin (less than 1 millimeter) lime coatings on undersides of rock fragments; strongly effervescent; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; about 7 miles south of Battle Mountain, approximately 1,500 feet north and 50 feet west of the southeast corner of sec. 11, T. 29 N., R. 47 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from mid-June through October

Soil temperature: 50 to 53 degrees F

Combined thickness of A and Bw horizons: 12 to 20 inches

Depth to carbonates: 28 to 40 inches

Control section: Texture—very gravelly or extremely gravelly loam, sandy loam, or coarse sandy loam; clay content—5 to 15 percent; rock fragments—35 to 75 percent, mainly pebbles

Reaction throughout the profile: Neutral to moderately alkaline

A horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3
- Structure—platy; massive in some pedons

Bw horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—3 or 4
- Structure—subangular blocky; massive in some pedons

C horizon:
- Value—5 to 7 dry, 3 to 5 moist
- Chroma—2 or 3, may be 4 in Ck horizon
- Carbonates—slightly effervescent to strongly effervescent in the lower subhorizon
- Other features—thin strata of loamy sand or loamy coarse sand in lower subhorizons of some pedons

Walti Series

The Walti series consists of moderately deep, well drained soils that formed in colluvium and residuum of weathered rhyolite, andesite, dacite, tuffs, and quartzite. Walti soils are on crests and side slopes of mountains. Slopes are 8 to 50 percent. Mean annual precipitation is about 14 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Fine, montmorillonitic, frigid Aridic Argixerolls

Typical pedon: Walti extremely cobbly loam, 30 to 50 percent slopes, in an area of the Walti-Softscrabble-Bucan association, in Lander County, south part. Pebbles cover 20 percent and cobbles and stones 40 percent of the soil surface:

A—0 to 4 inches; grayish brown (10YR 5/2) extremely cobbly loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine vesicular pores; 35 percent pebbles, 25 percent cobbles; neutral (pH 6.8); clear smooth boundary. (4 to 10 inches thick)

Bt1—4 to 10 inches; brown (7.5YR 5/2) gravelly clay

loam, dark brown (7.5YR 3/2) moist; moderate fine angular structure; hard, friable, sticky and plastic; common very fine and fine and few medium and coarse roots; common very fine and fine tubular pores; common thin clay films on peds; 15 percent pebbles, 5 percent cobbles; neutral (pH 7.0); abrupt wavy boundary. (2 to 7 inches thick)

2Bt2—10 to 24 inches; brown (10YR 5/3) clay, dark brown (7.5YR 3/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; very hard, firm, very sticky and very plastic; few very fine and fine roots along faces of peds; common very fine and fine tubular pores; common moderately thick clay films on faces of peds; 10 percent pebbles; neutral (pH 7.0); gradual wavy boundary. (6 to 14 inches thick)

2Bt3—24 to 30 inches; pinkish gray (7.5YR 6/2) clay, dark brown (7.5YR 4/2) moist; weak medium prismatic structure; very hard, firm, very sticky and very plastic; few fine roots; few very fine and fine tubular pores; common thin clay skins on faces of peds; 10 percent pebbles; neutral (pH 7.0); abrupt wavy boundary. (5 to 8 inches thick)

3R—30 inches; fractured andesite.

Type location: Lander County, Nevada, south part; about 17 miles west of Austin, approximately 1,300 feet east and 2,275 feet south of the northwest corner of sec. 14, T. 20 N., R. 46 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from late June to mid-October

Soil temperature: 44 to 46 degrees F

Mollic epipedon thickness: 7 to 12 inches, commonly includes upper part of the argillic horizon

Depth to bedrock: 20 to 30 inches

Control section: Clay content—40 to 50 percent; rock fragments—5 to 25 percent, mainly pebbles

Reaction throughout the profile: Neutral or mildly alkaline

A horizon:

Value—4 or 5 dry

Chroma—2 or 3

Bt horizon:

Hue—10YR or 7.5YR

Value—4 or 5 dry, 3 or 4 moist. Some pedons are 6 dry in the lower subhorizon above the bedrock

Chroma—2 to 4

Texture—clay loam or gravelly clay loam that is 27 to 35 percent clay and that has an abrupt lower boundary in the upper subhorizon; clay or gravelly clay that is 50 to 60 percent clay in the lower subhorizon

Rock fragments—5 to 25 percent, mostly pebbles and cobbles

Structure—prismatic or angular blocky

Welch Series

The Welch series consists of very deep, poorly drained soils that formed in alluvium of some vitric pyroclastic materials but mainly in mixed volcanic rock sources. Welch soils are on flood plains and inset fans in narrow hill and mountain valley drainageways. Slopes are 2 to 8 percent. Mean annual precipitation is about 14 inches, and mean annual temperature is about 42 degrees F.

Taxonomic class: Fine-loamy, mixed, frigid Cumulic Haplaquolls

Typical pedon: Welch loam, drained, 2 to 8 percent slopes:

A1—0 to 2 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; many very fine interstitial pores; neutral (pH 7.2); abrupt smooth boundary. (2 to 15 inches thick)

A2—2 to 4 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine interstitial pores; neutral (pH 6.8); abrupt smooth boundary. (2 to 14 inches thick)

A3—4 to 26 inches; dark gray (10YR 4/1) clay loam, very dark gray (10YR 3/1) moist; few fine distinct reddish yellow (7.5YR 6/6) mottles; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; many very fine and fine and common medium roots; common very fine, fine, and coarse tubular pores; 10 percent pebbles; neutral (pH 6.8); clear smooth boundary. (8 to 22 inches thick)

AC—26 to 30 inches; light brownish gray (10YR 6/2) clay loam, very dark grayish brown (10YR 3/2) moist; common large distinct reddish yellow (7.5YR 6/6) mottles; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; many very fine and common coarse tubular pores; slightly effervescent; mildly alkaline (pH 8.0); clear smooth boundary. (0 to 18 inches thick)

C—30 to 40 inches; light brownish gray (10YR 6/2) clay loam, dark grayish brown (10YR 4/2) moist; common large distinct reddish yellow (7.5YR 6/6) mottles; weak medium and coarse subangular

blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine roots; many very fine and few coarse tubular pores; mildly alkaline (pH 7.6); abrupt smooth boundary. (5 to 15 inches thick)

Ab—40 to 60 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; common large distinct reddish yellow (7.5YR 6/6) mottles; moderate medium and coarse prismatic structure; hard, friable, sticky and plastic; common very fine and fine and few medium roots; many very fine and few medium and coarse tubular pores; mildly alkaline (pH 7.6).

Type location: Lander County, Nevada; about 22 miles southeast of Battle Mountain, approximately 500 feet south and 1,200 feet west of the northeast corner of sec. 34, T. 29 N., R. 46 E.

Range in Characteristics

Soil moisture: Saturated at or near the surface for at least 1 month during most years, mainly in late winter and early spring; at a depth of 18 to 36 inches from early spring through September; drained phases recognized

Soil temperature: 42 to 46 degrees F

Mollic epipedon thickness: 26 to more than 60 inches, organic matter content decreasing irregularly with increasing depth

Control section: Clay content—27 to 35 percent when mixed; texture—dominantly sandy clay loam or clay loam; mineralogy—mixed, but the parent material has a large component of vitric pyroclastic materials

Other features: Buried A horizon; gravelly strata or strata of silty clay loam, silt loam, clay, loam, very fine sandy loam, or sandy loam in some pedons

A horizon:

Hue—10YR to 5Y or neutral
Value—3 to 5 dry, 2 or 3 moist
Chroma—0, 1, 2, or 3 in the upper part and 0, 1, or 2 in the lower part
Structure—weak to strong, thin or medium platy; weak or moderate, very fine to medium prismatic, granular, or subangular blocky; massive in some pedons that have a deeper A horizon
Consistence—soft to hard dry, very friable or friable moist, nonsticky to sticky and slightly plastic to plastic wet
Reaction—slightly acid or neutral
Other features—some pedons have high chroma, yellowish hue iron mottles

C horizon:

Hue—10YR, 5Y to 5B, or neutral
Value—5 to 8 dry, 3 to 5 moist
Chroma—0, 1, or 2
Reaction—slightly acid to mildly alkaline
Mottles—high chroma iron mottles in many pedons

This pedon is a taxadjunct to the Welch series because it has a C horizon that has hue of 10YR and chroma of 2 and has a subhorizon in the A horizon that is typically mildly alkaline. The Welch series typically has a Cq horizon below the mollic epipedon. The Cq horizon has hue of 5Y to 5B or is neutral in hue. It has chroma of 0 or 1. The Welch series also typically has an A horizon that is slightly acid or neutral. Use and management are the same.

Wendane Series

The Wendane series consists of very deep, somewhat poorly drained soils that formed in silty alluvium derived from volcanic rocks, tuff, loess, and volcanic ash. Wendane soils are on alluvial flats. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Aeric Halaquepts

Typical pedon: Wendane silt loam, frequently flooded:

A1—0 to 3 inches; light gray (10YR 7/1) silt loam, grayish brown (10YR 5/2) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and plastic; few very fine roots; many very fine vesicular and tubular pores; strongly effervescent; very strongly alkaline (pH 9.8); abrupt smooth boundary. (1 to 6 inches thick)

A2—3 to 8 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate very thin and thin platy structure; hard, very friable, sticky and plastic; few very fine and fine roots; many very fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.6); clear wavy boundary. (0 to 9 inches thick)

C—8 to 13 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; massive; hard, very friable, sticky and plastic; common very fine and few fine and medium roots; many very fine and few fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.6); clear wavy boundary. (5 to 16 inches thick)

Cqk1—13 to 19 inches; white (10YR 8/2) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, sticky and plastic; common very fine and few fine and medium roots; many very fine and few fine tubular pores; 20 percent weak, 10- to-30 millimeter

durinodes; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (6 to 30 inches thick)

Cqk2—19 to 27 inches; white (10YR 8/1) very fine sandy loam (volcanic ash), light gray (10YR 7/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and fine tubular pores; 20 percent weak, 5- to 20-millimeter durinodes; 20 percent weak discontinuous silica cementation; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (0 to 17 inches thick)

Ck—27 to 40 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; common fine distinct strong brown (7.5YR 5/6) mottles, brown (7.5YR 4/4) moist; massive; hard, friable, sticky and plastic; few very fine roots; many very fine and common fine tubular pores; continuous thin clay films lining pores; slightly effervescent; few fine filaments of secondary carbonates; strongly alkaline (pH 8.6); clear wavy boundary. (0 to 22 inches thick)

Ab—40 to 48 inches; light gray (10YR 6/1) silty clay loam, very dark grayish brown (10YR 3/2) and dark grayish brown (10YR 4/2) moist; massive; hard, friable, sticky and very plastic; few very fine roots; many very fine and few fine and medium tubular pores; continuous thin clay films lining pores; few snail shells; slightly effervescent; strongly alkaline (pH 8.6); clear irregular boundary. (0 to 11 inches thick)

C'—48 to 65 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; massive; hard, friable, sticky and very plastic; few very fine roots; many very fine and few fine tubular pores; continuous thin clay films lining pores; 15 percent fine and medium pebbles; slightly effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; approximately 4 miles north of Battle Mountain, about 2,500 feet north and 1,000 feet east of the southwest corner of sec. 32, T. 33 N., R. 45 E.

Range in Characteristics

Soil moisture: Saturated within a depth of 28 to 40 inches in spring of most years; dry mid-summer through mid-winter, moist in mid-winter, spring, and early summer; apparent seasonal high water table at a depth of 2.5 to 4.0 feet from February to July; drained phases recognized

Soil temperature: 47 to 52 degrees F

Mineralogy: Mixed, but has a strong influence from volcanic ash and other pyroclastic materials

Depth to Cqk horizon: 11 to 20 inches

Depth to high chroma mottles: 13 to 27 inches

Control section: Clay content—20 to 30 percent when mixed; texture—silt loam or silty clay loam, when averaged, that is less than 15 percent fine sand and coarser particles

Salts: Normally strongly saline in the upper part of the profile and nonsaline to slightly saline in the lower part

Exchangeable sodium: 15 to 70 percent in half or more of the uppermost 20 inches, the degree decreasing with depth

Profile reaction: Moderately alkaline to very strongly alkaline

Other features: Unconformable; stratified gravelly sand or very gravelly sand in some pedons below a depth of 40 inches

A horizon:

- Value—6 or 7 dry, 4 to 6 moist
- Chroma—1 to 4
- Structure—very thin to thick platy or fine granular; massive in some pedons
- Consistence—very friable to firm moist, slightly sticky to very sticky and slightly plastic to very plastic wet

C and Cqk horizons:

- Hue—10YR or 2.5Y
- Value—6 to 8, 4 to 7 moist
- Chroma—1 to 4
- Texture—very fine sandy loam, silt loam, silty clay loam, and clay loam
- Other features—strata of volcanic ash 4 to 10 inches thick at a depth of 13 to 36 inches

Cqk horizon:

- Thickness—13 to more than 30 inches, when combined
- Cementation—20 to 35 percent weakly or strongly cemented durinodes in a friable matrix and as much as 30 percent weak discontinuous silica cementation in any one horizon

Wendane Variant

The Wendane Variant consists of very deep, poorly drained soils that formed in loess, volcanic ash, and alluvium derived from mixed rock sources. Wendane Variant soils are on basin floor remnants. Slopes are 0 to 2 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Aeric Halaquepts

Typical pedon: Wendane Variant silt loam:

A1—0 to 5 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; common very fine tubular pores; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (4 to 10 inches thick)

A2—5 to 10 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; few fine distinct yellowish brown (10YR 5/4 moist) mottles; weak fine and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots; many very fine tubular pores; violently effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary. (4 to 10 inches thick)

Bqk—10 to 18 inches; white (10YR 8/1) gravelly silt loam, light yellowish brown (2.5Y 6/4) moist; common fine distinct yellowish brown (10YR 5/4 moist) mottles; massive; hard, friable, sticky and plastic; few very fine, fine, and medium roots; many very fine tubular pores; 25 percent pebbles; 30 percent weak to strong durinodes; violently effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (4 to 12 inches thick)

2Cqk—18 to 29 inches; white (10YR 8/2) very gravelly loam, light yellowish brown (2.5Y 6/4) moist; many medium and coarse distinct yellowish brown (10YR 5/6 moist) mottles; few coarse prominent very dark grayish brown (10YR 3/2 moist) iron and manganese stains; massive; hard, friable, sticky and plastic; few very fine roots; common very fine interstitial and tubular pores; 35 percent pebbles; 10 percent weak durinodes; violently effervescent; moderately alkaline (pH 8.4); gradual wavy boundary. (0 to 15 inches thick)

2Cq—29 to 60 inches; very pale brown (10YR 7/3) very gravelly loam, olive brown (2.5Y 4/4) moist; common medium distinct light yellowish brown (2.5Y 6/4 moist) and many medium prominent yellowish brown (10YR 5/8 moist) mottles; massive; hard, friable, sticky and plastic; few very fine roots; common very fine interstitial and tubular pores; 45 percent pebbles; 20 percent weak discontinuous silica cementation; violently effervescent; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; approximately 35 miles northeast of Austin, about 1,400 feet south and 1,500 feet west of the northeast corner of sec. 8, T. 23 N., R. 48 E.

Range in Characteristics

Soil moisture: Dry mid-summer through mid-winter, moist in mid-winter, spring, and early summer; apparent seasonal high water table between depths of 1.5 and 2.5 feet from February to June

Soil temperature: 47 to 52 degrees F

Depth to durinodes: 10 to 20 inches

Depth to weak discontinuous silica cementation: 20 to 30 inches

Control section: Clay content—18 to 27 percent when mixed; rock fragments—35 to 45 percent when mixed, mainly pebbles

Other features: Normally strongly saline and moderately sodic, the degree decreasing with depth

Weso Series

The Weso series consists of very deep, well drained soils that formed in alluvium of mixed rock sources and in a loess mantle that has high amounts of volcanic ash. Weso soils are on fan skirts. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Duric Camborthids

Typical pedon: Weso fine sandy loam:

A—0 to 5 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; strong thin and medium platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine random roots; many very fine vesicular and common very fine tubular pores; strongly alkaline (pH 8.6); abrupt wavy boundary. (1 to 5 inches thick)

Bw—5 to 11 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine random and few fine oblique and vertical roots; many very fine tubular and common very fine interstitial pores; strongly alkaline (pH 8.6); abrupt smooth boundary. (6 to 15 inches thick)

Bqk1—11 to 14 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; weak medium and thick platy structure; hard, firm, slightly sticky and slightly plastic; few very fine random and very few fine oblique and vertical roots; common very fine tubular pores; common medium lime coatings on faces of peds; weak silica cementation; slightly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (1 to 14 inches thick)

Bqk2—14 to 29 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft,

very friable, slightly sticky and slightly plastic; many very fine random and few fine and medium oblique and horizontal roots; common very fine tubular pores; 30 percent 10- to 30-millimeter, weak durinodes; few fine and medium lime filaments and threads; strongly effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (8 to 17 inches thick)

Bk1—29 to 36 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine random and very few fine oblique roots; common very fine tubular pores; few weak durinodes; few fine lime and gypsum filaments and threads; strongly effervescent; moderately alkaline (pH 8.6); clear wavy boundary. (0 to 13 inches thick)

Bk2—36 to 42 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine and fine random roots; many very fine tubular pores; few fine lime and gypsum filaments and threads; strongly effervescent; strongly alkaline (pH 8.8); gradual wavy boundary. (0 to 13 inches thick)

Cqk—42 to 60 inches; very pale brown (10YR 7/3) fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; very few very fine random roots; common very fine tubular pores; 30 percent 15- to 30-millimeter, weak durinodes; few fine lime and gypsum filaments and threads; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; about 7 miles northwest of Battle Mountain, approximately 530 feet west and 1,320 feet north of the southeast corner of sec. 28, T. 33 N., R. 44 E.

Range in Characteristics

Soil moisture: Usually dry, moist for short periods in winter and spring

Soil temperature: 47 to 53 degrees F

Depth to base of Bw horizon and silica cementation: 10 to 18 inches

Control section: Clay content—5 to 15 percent; rock fragments—0 to 25 percent, mainly pebbles; texture—dominantly fine sandy loam, very sandy loam, or loam; minor strata of sandy loam, coarse sandy loam, or silt loam in some pedons

Other features: Underlying skeletal material below a depth of 40 inches in some pedons

A horizon:
Value—6 or 7 dry, 3, 4, or 5 moist
Chroma—2 or 3
Reaction—Moderately alkaline to very strongly alkaline

Bw horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Reaction—moderately alkaline to very strongly alkaline
Other features—noncalcareous

Bqk horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Cementation—ranges from continuously weakly silica cemented to several weakly cemented plates up to 1 inch thick, slightly weaker cemented or friable material between plates; durinodes in a friable matrix in some pedons
Reaction—moderately alkaline to very strongly alkaline

C horizon:
Texture—very gravelly loamy sand to fine sandy loam
Rock fragments—averages 10 to 20 percent
Reaction—strongly alkaline or very strongly alkaline
Carbonates—these horizons are noneffervescent to violently effervescent

This pedon is a taxadjunct to the Weso series because it lacks unconformable layers within a depth of 40 inches. The Weso series typically have an unconformable 2Bk horizon within a depth of 40 inches. Use and management are the same.

Whirlo Series

The Whirlo series consists of very deep, well drained soils that formed mainly in mixed alluvium and in some loess. Whirlo soils are on inset fans, fan aprons, and fan skirts. Slopes are 0 to 15 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Camborthids

Typical pedon: Whirlo silt loam, 0 to 2 percent slopes:

A1—0 to 4 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine random roots; many very fine and few fine vesicular pores; 5 percent pebbles; very slightly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary. (1 to 6 inches thick)

A2—4 to 7 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine random and very few fine oblique roots; common very fine vesicular and tubular pores; 5 percent pebbles; moderately alkaline (pH 8.2); abrupt wavy boundary. (1 to 6 inches thick)

Bw—7 to 12 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and plastic; many very fine random and very few fine oblique roots; common very fine and few fine tubular pores; 5 percent pebbles; moderately alkaline (pH 8.2); clear wavy boundary. (4 to 10 inches thick)

2Bkq—12 to 24 inches; very pale brown (10YR 7/3) very gravelly fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine random and very few fine oblique roots; common very fine tubular pores; 35 percent pebbles; 10 percent weak, 10- to 30-millimeter durinodes; few fine lime filaments and thin pebble coatings; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (4 to 12 inches thick)

2Bk—24 to 60 inches; variegated extremely gravelly coarse sandy loam; single grained; loose, nonsticky and slightly plastic; common very fine random roots; 5 percent cobbles, 70 percent pebbles; lime coatings on 50 percent of pebble surfaces; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada; about 11 miles southeast of Battle Mountain, approximately 1,900 feet west and 1,450 feet north of the southeast corner of sec. 29, T. 31 N., R. 46 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from mid-May through November

Soil temperature: 47 to 53 degrees F

Depth to 2Bk horizon: 10 to 20 inches

Control section: Clay content—5 to 15 percent; rock fragments—35 to 70 percent, mainly pebbles

A horizon:
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—2 or 3
- Structure—weak or moderate, thin to thick platy; massive in some pedons
- Reaction—neutral to moderately alkaline

Bw horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Texture—gravelly sandy loam, fine sandy loam, very fine sandy loam, silt loam, or gravelly loam
- Rock fragments—0 to 30 percent pebbles
- Structure—weak or moderate, fine or medium subangular blocky; weak coarse prismatic; massive in some pedons
- Reaction—neutral to moderately alkaline

2Bk horizon:
- Hue—10YR or 2.5Y
- Value—6 to 8 dry, 3 to 6 moist
- Chroma—2 or 3
- Texture—very gravelly loam to extremely gravelly coarse sandy loam
- Rock fragments—35 to 75 percent, mainly pebbles but some cobbles and stones
- Reaction—moderately alkaline or strongly alkaline
- Carbonates—slightly to violently effervescent
- Other features—up to 10 percent weak durinodes in some pedons

Wholan Series

The Wholan series consists of very deep, well drained soils that formed in a loess mantle over silty alluvium derived from mixed rock sources. Wholan soils are on inset fans and fan skirts. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 49 degrees F.

Taxonomic class: Coarse-silty, mixed, mesic Typic Camborthids

Typical pedon: Wholan silt loam, 0 to 2 percent slopes, in an area of the McConnel-Rasille-Wholan association, in Lander County, Nevada, south part:

A—0 to 5 inch; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine and fine tubular pores; mildly alkaline (pH 7.8); abrupt smooth boundary. (1 to 6 inches thick)

Bw—5 to 13 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; mildly alkaline (pH 7.8); clear smooth boundary. (4 to 20 inches thick)

Bk—13 to 21 inches; white (10YR 8/2) very fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine

tubular pores; few fine lime filaments or threads; strongly effervescent; strongly alkaline (pH 8.5); clear smooth boundary. (4 to 15 inches thick)

C—21 to 25 inches; white (10YR 8/2) very fine sandy loam, light brownish gray (10YR 6/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; slightly effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (4 to 20 inches thick)

Cq—25 to 60 inches; light gray (10YR 7/2) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 5 percent weakly cemented durinodes; strongly effervescent; very strongly alkaline (pH 9.2).

Type location: Lander County, Nevada, south part; about 21 miles west of Austin, approximately 1,200 feet south and 400 feet west of the northeast corner of sec. 1, T. 18 N., R. 39 E. (part of the BLM contract survey completed in Lander County)

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from late May through October

Soil temperature: 47 to 53 degrees F

Depth to Bk horizon: 11 to 24 inches

Control section: Clay content—5 to 15 percent; texture—silt loam, very fine sandy loam that has thin strata of loam or fine sandy loam in some pedons

Reaction throughout the profile: Mildly alkaline to very strongly alkaline, becoming more alkaline with depth

Salt and sodium: Free of salt and sodium or slightly salt and sodium affected to a depth of 30 inches and moderately or strongly affected below this depth

Other features: Thin strata of 5 percent ½ to ¾ inch, very hard, firm, brittle durinodes in the C horizon of some pedons

A horizon:
- Value—5 to 7 dry, 3 to 5 moist (5 dry and 3 moist in the A1 horizon only, where present)
- Chroma—2 to 4
- Structure—weak or moderate, very thin to medium platy; coarse subangular blocky; massive in some pedons
- Consistence—soft or slightly hard
- Carbonates—noneffervescent or slightly effervescent

Bw horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Structure—weak, fine to coarse subangular blocky; medium or coarse prismatic; massive in some pedons

Bk and C horizons:
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—2 to 4
- Carbonates—few to many, fine or medium veins and soft masses of lime in the Bk horizon; C horizon lacks segregated lime
- Durinodes—up to 5 percent in some substrata of some pedons

Wieland Series

The Wieland series consists of very deep, well drained soils that formed in alluvium derived from mixed rock sources, loess, and volcanic ash. Wieland soils are on summits and side slopes of fan piedmont remnants. Slopes are 2 to 15 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 48 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Durixerollic Haplargids

Typical pedon: Wieland gravelly loam, 4 to 15 percent slopes, in an area of the Allor-Wieland association, in Lander County, south part. Pebbles cover 20 percent of the soil surface:

A1—0 to 5 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine vesicular pores; 15 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (1 to 8 inches thick)

A2—5 to 8 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine interstitial pores; 5 percent pebbles; mildly alkaline (pH 7.6); clear wavy boundary. (0 to 6 inches thick)

Bt1—8 to 14 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; few thin clay films on faces of peds; 15 percent pebbles; mildly alkaline (pH 7.6); gradual wavy boundary. (0 to 6 inches thick)

Bt2—14 to 20 inches; yellowish brown (10YR 5/4) gravelly clay, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to

strong medium angular blocky; hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; many moderately thick and few thick clay films on faces of peds; common silica and lime pendents on undersides of rock fragments; 30 percent pebbles; few fine irregular seams of secondary carbonates; slightly effervescent; moderately alkaline (pH 8.0); gradual smooth boundary. (2 to 10 inches thick)

Bqk1—20 to 25 inches; very pale brown (10YR 7/4) very gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; massive; very hard, firm, slightly sticky and slightly plastic; few fine roots; few very fine and fine tubular pores; 40 percent weak discontinuous silica cementation; many silica and lime pendents on undersides of rock fragments; 50 percent pebbles, 5 percent cobbles; common fine irregular seams of secondary carbonates; violently effervescent; moderately alkaline (pH 8.4); gradual smooth boundary. (0 to 6 inches thick)

Bqk2—25 to 44 inches; very pale brown (10YR 8/4) gravelly loam, light yellowish brown (10YR 6/4) moist; massive; very hard, very firm, slightly sticky and slightly plastic; few fine roots; few very fine tubular pores; 20 percent 5- to 25-millimeter, strongly cemented durinodes, mostly in few thin interlayered strata of noncemented material; 25 percent pebbles; weak continuous silica cementation; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (5 to 19 inches thick)

Cqk—44 to 60 inches; light gray (10YR 7/2) gravelly loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few fine tubular pores; 15 percent pebbles; weak continuous silica cementation; violently effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada, south part; about 8 miles northeast of Austin, approximately 800 feet east and 750 feet north of the southwest corner of sec. 21, T. 20 N., R. 45 E. (part of the BLM contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist from late October through early June

Soil temperature: 47 to 52 degrees F

Depth to weak continuous silica cementation: 19 to 30 inches

Depth to base of Bt horizon: 19 to 30 inches

Control section: Clay content—40 to 55 percent when mixed; rock fragments—5 to 35 percent pebbles when mixed

Other features: Variegated very gravelly loamy sand 2C horizon at a depth of 40 inches or more; 50 to 65 percent pebbles in the 2Cq horizon (where present)

A horizon:
- Value—5 or 6 dry
- Chroma—2 or 3
- Structure—weak to moderate, very thin to very thick platy or very fine to very coarse subangular blocky
- Reaction—mildly alkaline or moderately alkaline

Bt1 horizon:
- Value—5 or 6 dry
- Chroma—2 or 3
- Structure—weak or moderate, very fine to medium blocky or prismatic
- Consistence—very friable or friable, moist, sticky or very sticky and plastic or very plastic, wet
- Reaction—mildly alkaline or moderately alkaline

Bt2 horizon:
- Value—5 to 7 dry, 3 to 5 moist
- Chroma—2 to 4 dry, 3 or 4 moist
- Clay content—40 to 55 percent, as much as 60 percent in some pedons when mixed
- Rock fragments—5 to 35 percent pebbles when mixed
- Structure—weak or moderate, fine to coarse prismatic or very fine to medium angular blocky
- Reaction—moderately alkaline or strongly alkaline
- Other features—some pedons are slightly effervescent to strongly effervescent, and commonly have lime filaments in the lower part of the Bt horizon

Bqk and Cqk horizons:
- Hue—10YR or 2.5Y
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—1 to 4
- Effervescence—noneffervescent to violently effervescent
- Cementation—thin discontinuous weakly cemented Bqk subhorizon above the continuously cemented horizon in some pedons
- Relict mottles—below a depth of 30 inches in many pedons

Winada Series

The Winada series consists of moderately deep, well drained soils that formed in residuum and colluvium derived from mixed rock sources. Winada soils are on side slopes of mountains. Slopes are 50 to 75 percent. Mean annual precipitation is about 14 inches, and mean annual temperature is about 40 degrees F.

Taxonomic class: Loamy-skeletal, mixed Argic Cryoborolls

Typical pedon: Winada gravelly loam, 50 to 75 percent slopes, in an area of the Hapgood-Tusel-Winada association. Pebbles cover 30 percent of the soil surface:

A1—0 to 5 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and fine interstitial pores; 30 percent pebbles; neutral (pH 7.2); abrupt smooth boundary. (3 to 7 inches thick)

A2—5 to 12 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, sticky and plastic; many very fine, fine, and medium roots; many very fine and fine interstitial pores; 25 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary. (5 to 9 inches thick)

Bt—12 to 24 inches; brown (10YR 5/3) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; strong medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; common moderately thick clay films on peds and in pores; 30 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.4); abrupt wavy boundary. (9 to 16 inches thick)

Cr—24 to 36 inches; weathered sandstone.

R—36 inches; unweathered sandstone.

Type location: Lander County, Nevada; approximately 30 miles south of Battle Mountain, about 1,500 feet south and 3,000 feet west of the northeast corner of sec. 14, T. 28 N., R. 45 E.

Range in Characteristics

Soil moisture: Moist from late autumn through early summer, dry from late July through early October

Soil temperature: 39 to 44 degrees F

Mean summer soil temperature: 54 to 59 degrees F

Mollic epipedon thickness: 8 to 12 inches

Combined thickness of A and Bt horizons and depth to paralithic contact: 20 to 30 inches

Depth to lithic contact: 30 to 40 inches

Reaction throughout the profile: Neutral or mildly alkaline

A horizon:

Chroma—2 or 3

Consistence—soft or slightly hard dry

Bt horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4

Percent clay—28 to 35 percent

Rock fragments—35 to 50 percent, mainly pebbles

Structure—moderate or strong

Winada Variant

The Winada Variant consists of deep, well drained soils that formed in residuum and colluvium derived from chert. Winada Variant soils are on side slopes of mountains. Slopes are 30 to 50 percent. Mean annual precipitation is about 14 inches, and mean annual temperature is about 38 degrees F.

Taxonomic class: Loamy-skeletal, mixed Argic Cryoborolls

Typical pedon: Winada Variant very gravelly fine sandy loam, 30 to 50 percent slopes, in an area of the Sumine-Winada Variant-Pernty association:

A1—0 to 3 inches; dark grayish brown (10YR 4/2) very gravelly fine sandy loam, very dark grayish brown (10YR 3/2) moist; strong very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; 35 percent pebbles; mildly alkaline (pH 7.4); abrupt wavy boundary. (2 to 4 inches thick)

A2—3 to 7 inches; dark grayish brown (10YR 4/2) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; strong fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium and coarse roots; many very fine tubular pores; 35 percent pebbles; neutral (pH 7.0); clear wavy boundary. (3 to 5 inches thick)

Bt1—7 to 13 inches; brown (10YR 5/3) very gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine to coarse roots; many very fine tubular pores; 45 percent pebbles; few thin clay films coating rock fragments and bridging sand grains; neutral (pH 7.0); clear wavy boundary. (5 to 8 inches thick)

Bt2—13 to 24 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine and few medium and coarse roots; common very fine tubular and few fine interstitial pores; 45 percent pebbles, 5 percent cobbles; few thin clay films coating rock fragments and bridging sand grains; neutral (pH 7.0); gradual wavy boundary. (10 to 20 inches thick)

C—24 to 45 inches; yellowish brown (10YR 5/4) extremely gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 60 percent pebbles; 15 percent cobbles; neutral (pH 7.0); clear wavy boundary. (15 to 30 inches thick)
R—45 inches; fractured chert

Type location: Lander County Nevada; approximately 14 miles south of Battle Mountain, about 520 feet north and 520 feet west of the southeast corner of sec. 10, T. 29 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually moist in late fall through early summer, dry from late July through September
Annual soil temperature: 42 to 46 degrees F
Summer soil temperature: 55 to 59 degrees F
Mollic epipedon thickness: 12 to 15 inches
Depth to bedrock: 40 to 60 inches
Control section: Clay content—20 to 30 percent; rock fragments—35 to 55 percent, mainly pebbles
Reaction throughout the profile: Neutral or mildly alkaline

Wiskan Series

The Wiskan series consist of moderately deep, well drained soils that formed in a thin loess layer over residuum and colluvium derived from chert, argillite, and other mixed rocks. Wiskan soils are on side slopes of crests and mountains. Slopes are 15 to 50 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Xerollic Haplargids

Typical pedon: Wiskan very gravelly silt loam, 30 to 50 percent slopes, in an area of the Wiskan-Linrose association:

A1—0 to 2 inches; light brownish gray (10YR 6/2) very gravelly silt loam, brown (10YR 4/3) moist; weak very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 35 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 4 inches thick)
A2—2 to 8 inches; light brownish gray (10YR 6/2) very gravelly silt loam, brown (10YR 4/3) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; 40 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 8 inches thick)
2BA—8 to 16 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular pores; 30 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (0 to 8 inches thick)
2Btk1—16 to 25 inches; pale brown (10YR 6/3) very gravelly clay loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; few thin clay films on peds and lining pores; 45 percent pebbles, 5 percent cobbles; thin lime coatings on undersides of rock fragments; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (5 to 12 inches thick)
2Btk2—25 to 28 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate fine subangular blocky structure; firm, hard, sticky and plastic; common very fine roots; common very fine tubular pores; common thin clay films on peds and lining pores; 45 percent pebbles, 10 percent cobbles; thin lime coatings on underside rock fragments; few lime filaments or threads; slightly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary. (3 to 8 inches thick)
R—28 inches; unweathered fractured chert.

Type location: Lander County, Nevada; about 6 miles southwest of Battle Mountain, about 750 feet south and 250 feet west of the approximate northeast corner of sec. 36, T. 32 N., R. 43 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 44 to 47 degrees F
Depth to bedrock: 20 to 40 inches
Reaction throughout the profile: Mildly alkaline or moderately alkaline

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Structure—platy or granular
Other features—horizons having mollic colors lack the required thickness for a mollic epipedon

2Btk horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 to 6

Texture—very gravelly clay loam, very gravelly loam, and extremely gravelly clay loam
Clay content—25 to 35 percent
Rock fragments—45 to 65 percent, mainly pebbles
Structure—subangular blocky or prismatic
Secondary lime—none to few fine filaments or threads, thin coatings on some to all rock fragments
Effervescence—noneffervescent to slightly effervescent matrix

Xine Series

The Xine series consists of moderately deep, well drained soils formed in residuum derived from limestone and calcareous shale. Xine soils are on side slopes of mountains. Slopes are 30 to 50 percent. Mean annual precipitation is about 12 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Calcixerolls

Typical pedon: Xine gravelly loam, 30 to 50 percent slopes, in an area of the Attella-Xine-Kram association. Pebbles cover 15 percent of the soil surface:

A1—0 to 5 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 15 percent pebbles; slightly effervescent; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 8 inches thick)

A2—5 to 10 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine and fine tubular pores; 25 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (5 to 8 inches thick)

Bk1—10 to 18 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many fine, medium, and coarse roots; many very fine, fine, and medium tubular pores; 20 percent pebbles, 20 percent cobbles, 5 percent stones; few fine lime filaments and coatings on rock fragments; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (4 to 10 inches thick)

Bk2—18 to 33 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and medium roots; common very fine and fine tubular pores; 20 percent pebbles, 15 percent cobbles, 5 percent stones; common fine lime filaments and soft masses and lime coatings on rock fragments; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (5 to 21 inches thick)

Cr—33 inches; weathered, fractured calcareous shale.

Type location: Lander County, Nevada; about 40 miles southwest of Battle Mountain, in an unsurveyed area approximately 1,600 feet north and 5,800 feet east of the southeast corner of sec. 24, T. 25 N., R. 39 E.

Range in Characteristics

Soil moisture: Moist in late fall through early summer, dry from July through October
Soil temperature: 44 to 46 degrees F
Mollic epipedon thickness: 7 to 14 inches
Depth to paralithic contacts: 20 to 40 inches
Depth to calcic horizon: 10 to 25 inches
Control section: Texture—very cobbly loam or very cobbly sandy loam; clay content—10 to 18 percent; rock fragments—35 to 60 percent, mainly cobbles; carbonates—25 to 40 percent calcium carbonate equivalent
Other features: Amount of secondary lime increasing with depth

A horizon:
Value—4 or 5 dry, 2 or 3 moist; thin A horizon that has dry value of 6 in some pedons
Chroma—2 or 3
Reaction—mildly alkaline or moderately alkaline

Bk horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—3 or 4
Reaction—moderately alkaline or strongly alkaline

Yipor Series

The Yipor series consists of very deep, well drained soils that formed in some loess but mainly in mixed silty alluvium. Yipor soils are on inset fans and fan skirts. Slopes are 0 to 2 percent. Mean annual precipitation is about 7 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Coarse-silty, mixed (calcareous), mesic Typic Torriorthents

Typical pedon: Yipor silt loam, moderately saline-sodic:

A1—0 to 4 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; weak coarse prismatic structure parting to moderate fine and medium

platy; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine vesicular and common very fine interstitial and tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear irregular boundary. (2 to 5 inches thick)

A2—4 to 8 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine and few fine roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (0 to 5 inches thick)

C1—8 to 18 inches; very pale brown (10YR 7/3) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; violently effervescent; strongly alkaline (pH 9.0); gradual smooth boundary. (5 to 12 inches thick)

C2—18 to 38 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and very few fine roots; common very fine tubular pores; violently effervescent; strongly alkaline (pH 8.8); gradual wavy boundary. (4 to 20 inches thick)

Cy—38 to 60 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; very few very fine and fine roots; common very fine tubular pores; common fine rounded gypsum crystals; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Lander County, Nevada; approximately 8.5 miles southeast of Battle Mountain, about 2,600 feet west and 0.4 mile south of the northeast corner of sec. 17, T. 31 N., R. 46 E.

Range in Characteristics

Soil moisture: Usually dry, moist for short periods in winter and early spring

Soil temperature: 47 to 52 degrees F

Control section: Texture—silt loam or very fine sandy loam that has thin strata of loam in some pedons; clay content—8 to 18 percent

Reaction throughout the profile: Strongly alkaline or very strongly alkaline

Effervescence: Strongly effervescent or violently effervescent throughout the profile

Salt and sodium: Generally moderately or strongly saline-sodic, free of salt and sodium or slightly saline-alkali in the surface layer of some pedons

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

C horizon:
Value—6 or 7 dry, 4, 5, or 6 moist
Chroma—3 or 4
Other features—strata of loamy sand below a depth of 40 inches in some pedons, 5 to 15 percent lime concretions in the control section of some pedons, no gypsum crystals in the lower part of some pedons

Zineb Series

The Zineb series consist of very deep, well drained soils that formed in loamy alluvium of some volcanic ash but mainly of mixed rock sources. Zineb soils are on inset fans, fan aprons, and fan skirts. Slopes are 0 to 15 percent. Mean annual precipitation is about 8 inches, and mean annual temperature is about 46 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Durixerollic Camborthids

Typical pedon: Zineb gravelly loam, 2 to 8 percent slopes. Pebbles cover 20 percent of the soil surface:

A1—0 to 3 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; 10 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.0); abrupt smooth boundary. (2 to 4 inches thick)

A2—3 to 5 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine tubular pores; 10 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.0); abrupt smooth boundary. (2 to 5 inches thick)

Bw—5 to 11 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine tubular pores; 15 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.0); clear wavy boundary. (6 to 9 inches thick)

Bq—11 to 16 inches; light yellowish brown (10YR 6/4)

very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few medium roots; common very fine tubular pores; 30 percent weak discontinuous silica cementation; 5 percent 5- to 10-millimeter, strongly cemented durinodes; 30 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary. (5 to 8 inches thick)

Bqk1—16 to 20 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; 20 percent weak discontinuous silica cementation; 35 percent pebbles, 5 percent cobbles; common medium lime coatings on undersides of rock fragments; noneffervescent matrix; moderately alkaline (pH 8.4); clear smooth boundary. (4 to 12 inches thick)

2Bqk2—20 to 45 inches; pale brown (10YR 6/3) extremely cobbly loamy coarse sand, dark brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common medium roots; common very fine tubular pores; 70 percent weak discontinuous silica cementation; 40 percent pebbles, 25 percent cobbles; many medium lime coatings on undersides of rock fragments; slightly effervescent matrix; strongly alkaline (pH 8.6); clear wavy boundary. (0 to 30 inches thick)

3Btbk—45 to 60 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; hard, firm, slightly sticky and plastic; common fine and medium roots; common very fine tubular pores; few thin clay films on faces of peds; 10 percent pebbles; common fine lime filaments and seams; slightly effervescent matrix; strongly alkaline (pH 9.0).

Type location: Lander County, Nevada; about 33 miles southeast of Battle Mountain, approximately 600 feet west and 2,440 feet north of the approximate southeast corner of sec. 33, T. 27 N., R. 47 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from June through October

Soil temperature: 47 to 52 degrees F

Control section: Rock fragments—averages 50 to 75 percent, pebbles are dominant in upper part and cobbles in lower part

Depth to carbonates and Bk horizon: 16 to 26 inches

Depth to Bq horizon: 10 to 18 inches

Other features: Unconformable loam subhorizon below a depth of 40 inches in some pedons

A horizon:
- Value—5 or 6 dry, the uppermost 7 inches greater than 5.5 dry when mixed
- Chroma—2 or 3

Bw horizon:
- Value—3 or 4 moist
- Chroma—3 or 4
- Structure—subangular blocky; massive in some pedons
- Rock fragments—15 to 35 percent, dominantly pebbles
- Texture—gravelly loam or gravelly very fine sandy loam

Bq horizon:
- Texture—very gravelly loam or very gravelly sandy loam
- Rock fragments—35 to 60 percent, dominantly pebbles
- Silica cementation—weak discontinuous silica cementation, durinodes, or both in a friable matrix

2Bqk horizon:
- Texture—extremely cobbly sandy loam to extremely cobbly loamy coarse sand or extremely cobbly coarse sand
- Rock fragments—60 to 80 percent, dominantly cobbles

Zoesta Series

The Zoesta series consists of very deep, well drained soils that formed in alluvium and colluvium derived from mixed rock sources. Zoesta soils are on summits and side slopes of mountain valley fans and fan piedmont remnants, partial ballenas, and mountain side slopes. Slopes are 2 to 50 percent. Mean annual precipitation is about 11 inches, and mean annual temperature is about 44 degrees F.

Taxonomic class: Fine, montmorillonitic, frigid Xerollic Paleargids

Typical pedon: Zoesta cobbly loam, 15 to 30 percent slopes, in an area of the Zoesta-Robson-Softscrabble association. Pebbles cover 20 percent of the soil surface:

A1—0 to 2 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine vesicular pores; 15 percent pebbles, 15 percent cobbles; neutral (pH 7.2); abrupt smooth boundary. (2 to 5 inches thick)

A2—2 to 7 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; 10 percent pebbles, 15 percent cobbles, 5 percent stones; mildly alkaline (pH 7.4); abrupt smooth boundary. (0 to 5 inches thick)

Bt1—7 to 12 inches; pale brown (10YR 6/3) cobbly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and medium roots; common very fine and fine tubular pores; few thin clay films coating sand grains; 10 percent pebbles, 15 percent cobbles; mildly alkaline (pH 7.4); abrupt smooth boundary. (0 to 6 inches thick)

Bt2—12 to 18 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong fine and medium prismatic structure; very hard, very firm, very sticky and very plastic; few very fine roots; few fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 5 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary. (5 to 11 inches thick)

Bt3—18 to 23 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong fine prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine roots; few fine tubular pores; common moderately thick clay films on faces of peds and lining pores; 10 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary. (5 to 9 inches thick)

Btk—23 to 31 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/6) moist; strong fine prismatic structure parting to strong fine subangular blocky; very hard, very firm, sticky and plastic; common moderately thick clay films on faces of peds and lining pores; 30 percent pebbles; common fine soft lime masses; slightly effervescent matrix; moderately alkaline (pH 8.2); gradual wavy boundary. (8 to 21 inches thick)

Bqk—31 to 60 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm, sticky and slightly plastic; 40 percent pebbles; 15 percent strongly cemented durinodes; many large soft lime masses; violently effervescent; moderately alkaline (pH 8.4).

Type location: Lander County, Nevada, south part; about 16 miles north of Austin, approximately 1,900 feet south and 800 feet west of the northeast corner of sec. 1, T. 22 N., R. 44 E. (part of the BLM private contract completed in Lander County)

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring
Soil temperature: 44 to 46 degrees F
Combined thickness of A and Bt horizons: 30 to 40 inches
Depth to carbonates: 10 to 20 inches
Control section: Texture—clay loam or clay; clay content—35 to 50 percent; rock fragments—less than 15 percent in the upper part; 15 to 35 percent in the lower part, mainly pebbles
Effervescence: Increasing with depth, secondary lime in the lower solum

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 to 6
Structure—moderate or strong, fine, medium, or coarse prismatic structure
Reaction—mildly alkaline or moderately alkaline

Bqk horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—4 or 6
Texture—clay loam or loam that is 20 to 35 percent clay
Rock fragments—35 to 60 percent, mainly pebbles
Reaction—moderately alkaline or strongly alkaline
Other features—some pedons lack durinodes

Zoesta Variant

The Zoesta Variant consists of very deep, well drained soils formed in residuum and colluvium derived from chert, quartzite, and extrusive volcanic rock sources. Zoesta Variant soils are on sides slopes of foothills. Slopes are 15 to 30 percent. Mean annual precipitation is about 9 inches, and mean annual temperature is about 47 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Paleargids

Typical pedon: Zoesta Variant gravelly loam, 15 to 30 percent slopes, in an area of the Zoesta Variant-Jung-McVegas association. Pebbles cover 45 percent and cobbles 5 percent of the soil surface:

A1—0 to 3 inches; pale brown (10YR 6/3) gravelly

loam, dark brown (10YR 3/3) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine vesicular pores; 25 percent pebbles; neutral (pH 7.0); abrupt smooth boundary. (2 to 5 inches thick)

A2—3 to 8 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 3/4) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 15 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary. (0 to 5 inches thick)

Bt1—8 to 13 inches; light brown (7.5YR 6/4) gravelly clay loam, dark brown (7.5YR 3/4) moist; strong fine subangular blocky structure; hard, firm, sticky and very plastic; common very fine and fine roots; common very fine tubular pores; common thin clay films on faces of peds; 20 percent pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary. (0 to 6 inches thick)

2Bt2—13 to 20 inches; light brown (7.5YR 6/4) clay, dark brown (7.5YR 4/4) moist; strong medium prismatic structure parting to strong coarse angular blocky; very hard, very firm, very sticky and very plastic; continuous moderately thick clay films on faces of peds; 5 percent pebbles; mildly alkaline (pH 7.8); clear wavy boundary. (5 to 11 inches thick)

2Bt3—20 to 27 inches; light brown (7.5YR 6/4) clay, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate coarse subangular blocky; very hard, very firm, very sticky and very plastic; few fine roots; few very fine tubular pores; many moderately thick clay films on faces of peds; 10 percent pebbles; moderately alkaline (pH 8.0); clear wavy boundary. (5 to 9 inches thick)

2Bt4—27 to 36 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; common fine black (10YR 2/1) manganese stains; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few fine tubular pores; common thin clay films on faces of peds; 10 percent pebbles; moderately alkaline (pH 8.2); gradual wavy boundary. (8 to 21 inches thick)

3Bqk—36 to 60 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; common large black (10YR 2/1) manganese stains; massive; very hard, firm, slightly sticky and slightly plastic; few very fine tubular pores; 40 percent weak discontinuous silica cementation; 25 percent pebbles; noneffervescent matrix; common strongly effervescent fine lime seams; moderately alkaline (pH 8.2).

Type location: Lander County, Nevada; about 37 miles south of Battle Mountain, approximately 2,300 feet south and 100 feet east of the northwest corner of sec. 2, T. 25 N., R. 45 E.

Range in Characteristics

Soil moisture: Usually dry, moist in winter and spring

Soil temperature: 47 to 52 degrees F

Combined thickness of the A and Bt horizons: 35 to 45 inches

Depth to Bqk horizon: 35 to 45 inches

Control section: Clay content—45 to 60 percent when mixed; rock fragments—5 to 10 percent when mixed

A horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4

Bt horizon:

Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 to 6
Clay content—55 to 65 percent in the upper part and 35 to 50 percent in the lower part

Bqk horizon:

Value—6 to 8 dry, 5 or 6 moist
Chroma—3 to 6
Texture—loam or sandy loam
Rock fragments—15 to 35 percent, mainly pebbles
Cementation—20 to 50 percent discontinuous weak silica cementation; thin strata of continuous weak cementation in some pedons
Reaction—moderately alkaline or strongly alkaline
Other features—some pedons lack durinodes

Formation of the Soils

Soil is a natural body on the earth's surface in which plants grow. It is a mixture of varying proportions of rocks, minerals, organic matter, water, and air. The rocks and minerals are fragmented and are partly or wholly weathered. Soils have distinctive layers, or horizons, that are parallel to the soil surface. Soil horizons are the product of environmental forces acting upon material deposited or accumulated through geologic activity.

Soils differ from one another in different localities and within short distances. The differences are the result of the interaction of five soil-forming factors that affect soil formation. These factors are biological forces, mainly the plant cover and the organisms living in and on the soil; climate, mainly the temperature and kind and amount of precipitation that have existed since accumulation of the parent material; relief, mainly as it affects the internal and external soil properties, such as drainage, aeration, susceptibility to erosion, and exposure to sun and wind; and parent material, including texture and structure of the material as well as its mineralogic and chemical composition; and the length of time that the soil-forming factors have been operating. The combination of these factors forms a view of soil genesis as a holistic ecosystem *(13)*.

The soil formation factors combine and interrelate to create soil properties which define soil horizons. The age or strength of expression of the soil horizons is a reflection of the amount of weathering of parent material resulting from the interaction of moisture, temperature, and biological activity as influenced by time. The kinds and combinations of diagnostic horizons and other diagnostic properties *(26, 27)*, together with their strength of expression, provide clues to the age of the soils in the area. Important diagnostic horizons present in soils within the area include the mollic epipedon, the cambic, argillic, and natric horizons, and the silica-cemented horizons.

The mollic epipedon is a thick, dark colored surface horizon that has a high base saturation and that formed in areas where organic matter can accumulate faster than it is oxidized. When conditions are favorable, the mollic epipedon can form in 100 to 1,000 years *(27)*. It formed mainly through the additions of organic matter to the soil in the form of decomposed roots and organic residues from the surface. On recent soils, it sometimes occurs as the only diagnostic horizon, and on older soils, it sometimes occurs in combination with other diagnostic horizons.

The characteristics of cambic horizons have been identified in this survey area. They are the redistribution of soluble salts and carbonates to a lower position in the soil profile, the oxidation of subsoil, and the alteration of the original parent material stratification to platy or blocky soil structure. Cambic horizons occur in soils formed on stable Holocene land surfaces. For example, in southern New Mexico cambic horizons are less than about 5,000 years old *(8, 11)*. In this survey area and in northern and central Nevada, cambic horizons generally formed between 5,000 and 10,000 years before present. Their age has been determined mostly as a result of soil mapping in areas near and below the last high stage of Lake Lahontan-age Pleistocene lakes *(12, 14, 16, 18)*. Cambic horizons also occur in soils that have thin layers of Mazama ash in their profiles.

Argillic horizons are subsurface horizons of alluvial clay accumulation. Prominent argillic horizons in this area generally occur in soils that formed on Wisconsinan-age and pre-Wisconsinan-age surfaces. This concept was the conclusion of studies in the Southwest *(9, 10)* and in Nevada *(5, 12, 15, 19)* and is further supported in Soil Taxonomy *(27)*. With increasing age and constancy of other conditions, argillic horizons become finer in texture and somewhat thicker and tend to develop abrupt upper boundaries.

Natric horizons are special kinds of argillic horizons whose physical and chemical properties have been influenced as the result of a high exchangeable sodium content. Following earlier development as argillic horizons, prominent natric horizons may have developed their present characteristics as the result of eolian deposits supplying sodium. Transportation and deposition of sodium salts with eolian deposits are believed to be important present-day processes that affect soils in the area.

Volcanic glass, found in deposits derived from pyroclastic material and in eolian deposits of volcanic ash, is a source of silica for the formation of durinodes and duripans in many of the soils in the survey area. Holocene soils developed in deposits containing a volcanic ash-rich zone generally have weakly to moderately cemented horizons rich in silicious material amorphous to x-rays *(12)*. These zones are described in soils as horizons with durinodes, discontinuous silica cementation, or continuous silica cementation, each grading from incipient to strong. Forms of silica cementation strongly influenced by volcanic ash apparently are capable of forming during a relatively short period of time and are probably less than 7,000 years old. Platy or laminated forms of duripans with or without thin, discontinuous laminar forms of duripans tend to develop in loamy material. Duripans are massive, platy horizons that are cemented with silica and, in some instances, with accessory calcium carbonates. Because of their association with prominent argillic horizons, massive duripans capped with silica-cemented laminar layers are probably the oldest kind of duripan in the area and are of early Wisconsinan to pre-Wisconsinan age.

The overall landscape of the area, mainly the mountains and valleys, is the result of geologic stratigraphic and structural control. The present topography and landforms, however, are primarily the result of events during Quaternary time. The kinds of soils that formed are indicative of the stability and age of the surfaces of landforms on which they occur. The degree of development of diagnostic subsurface horizons in the soils of this area indicates a soil sequence that ranges in age from present day, Holocene, to pre-Wisconsinan. This range in age is a major reason for the many kinds of soils in the area.

Climate

The major climatic forces that influence soil formation are precipitation and temperature. Recent soils reflect the present climate, which can be directly related to soil development. Soils older than Holocene were created under past climatic conditions. Morrison and Frye propose that accelerated soil formation occurred during unique climatic periods, while the climate prevailing between these periods was not conducive to soil formation *(16, 17, 18, 19)*.

The present desert climate began at the start of the Pleistocene *(4)*, but both precipitation and temperature have fluctuated widely. At present, the characteristics of the climate are warm, dry summers and cool, moist winters. North-south trending mountain ranges strongly influence precipitation. Precipitation from the storms in the survey area increases with increasing elevation. Consequently, the average annual precipitation ranges from about 6 inches in the lowest elevations of Buffalo and Crescent Valleys to about 16 inches or more at the highest elevations in the Shoshone Range. The precipitation falls mainly in winter and spring.

The average annual air temperature ranges from about 50 degrees F at the lower elevations of the western valleys to about 41 degrees F or lower in some of the high mountain ranges. In winter, freezing and thawing generally occur throughout the survey area, except in those areas that generally are insulated by snow cover. The effects of frost action are heaving plants, developing miniature rings, rock stripes, and eroded surface soils resulting from solifluction. At some of the higher elevations, freezing and thawing have fractured and displaced the bedrock.

Major climatic variations are the result of the effects of topography and relief. Temperature decreases with elevation, while precipitation increases with elevation. The soils in the survey area reflect a general zonation with respect to elevation and longitudinal location. As precipitation increases, leaching increases and the production of native vegetation increases, both resulting in an increased organic matter supply and a recycling of the bases. Combinations of and fluctuations in temperature and moisture affect the rate of organic matter accumulation and decomposition and of mineral weathering *(6, 13)*.

At the lower elevations of 4,400 to 5,000 feet within the survey area, the average annual precipitation is about 6 to 8 inches and the average annual air temperature is about 48 to 50 degrees F. In this warm, arid part of the survey area, there is no surplus soil moisture to percolate through the soil. Chemical weathering of parent material is slow, leaching is incomplete, and eluviation and illuviation proceed at a very slow rate. The plant cover is sparse and consists mainly of drought- and salt-tolerant shrubs. Typically, the soils are low in organic matter content and have a thin, light-colored A horizon. Soluble salts, calcium carbonate, and silica accumulate in the soil profile at a relatively shallow depth. Duric Camborthids (Broyles series) and Duric Natrargids (Beoska series) reflect soil formation in this climatic zone.

At elevations of 5,000 to 6,500 feet within the survey area, the average annual precipitation is about 10 inches and the average annual air temperature is about 47 degrees F. In this warm, semiarid part of the survey area, the plant cover is thicker than at the lowest elevations. Also, it consists mainly of drought-tolerant shrubs and grasses. Chemical weathering of parent

material proceeds at a slow rate. Typically, weathering products are leached to the lowest profile below the root zone and calcium carbonate and silica accumulate in the lowest part of the soil profile. Soluble salts are completely leached or concentrated deep within the profile. Typically, the soils are moderately low in organic matter content and have a thin, relatively dark colored or thicker, light-colored A horizon and thicker cambic or argillic horizons over horizons of silica or carbonate accumulation. Durixerollic Camborthids (Orovada series) in the valleys and Lithic Xerollic Haplargids (Punchbowl series) in the foothills reflect soil formation in this climatic zone.

At elevations of 6,500 to 8,000 feet, the average annual precipitation is about 12 to 14 inches and the average annual air temperature is about 43 to 46 degrees F. In this cool, semiarid part of the survey area, the increased precipitation and decreased evapotranspiration result in a dense plant cover consisting mainly of shrubs and perennial grasses and localized stands of singleleaf pinyon and Utah juniper. The lower temperatures cause a slower rate of organic matter decomposition resulting in the build up of organic matter in the surface layer. Chemical weathering is moderate in this climatic zone, leaching is complete, and eluviation and illuviation commonly proceed at a moderate rate. Typically, the soils have a thick, dark mollic epipedon and a moderately leached subsoil. Aridic Haploxerolls (Loncan series) and Aridic Argixerolls (Sumine series) reflect soil formation in this climatic zone.

At the highest elevations, up to 9,600 feet, the average annual precipitation is about 14 to more than 16 inches and the average annual air temperature is about 41 to 43 degrees F. This cold part of the survey area consists mainly of windswept mountain crests and side slopes, sheltered snow pockets, and mountain back slopes, which accumulate drifted snow. The rate of weathering is maximal for the survey area. Excessive leaching has removed most soluble products, resulting in a generally lower base saturation than in other climatic zones. The slow rate of organic matter decomposition results in a thick, dark A horizon. The vegetation in areas that accumulate drifted snow is thick, mountain shrub-grass. Windswept areas have reduced effective precipitation, which is reflected in the lower production of plants. Soils on stable, north-facing snow pockets may be older than their profile development may predict. These soils remain cold most of the year, thus inhibiting soil development. During glacial periods these soils may have remained frozen or under snow cover throughout the year. Pachic Cryoborolls (Hapgood series) and Argic Cryoborolls (Packer series) reflect the soil formation in this climatic zone. These soils are on mountain back slopes and on windswept mountain crests, respectively.

Relief

Relief pertains to the shape of the landscape and includes the position of water tables. These shapes are combinations of slope inclination, length of slope, concavity or convexity, and exposure to wind and sun. Any happening on a slope, including erosion and deposition, affects soil formation *(13)*.

In the landscapes of Lander County, North Part, subparallel mountain ranges rising abruptly from broad, alluvium-filled valleys are dominant. The valleys are essentially either bolsons or semibolsons that receive drainage water mainly from the surrounding mountain ranges. Fan piedmonts and fan skirts slope down from the mountains and decrease in slope until they merge with alluvial flats and finally into central playas or axial stream flood plains *(22)*.

The nearly level, axial stream flood plains along the Humboldt and Reese Rivers are poorly drained or very poorly drained. Runoff is very slow, most of the soils are subject to flooding, and some areas receive deposition. The soils in these areas support dense stands of meadow vegetation. These stands have contributed a large amount of organic matter to the soils, producing a thin to thick, dark colored A horizon. Some of these soils have excess soluble salts in their upper horizons. Examples of these soils are Fluvaquentic Haplaquolls (Humboldt and Paranat series) and Aeric Fluvaquents (Sonoma series).

Alluvial flats and lake plains are somewhat poorly drained. Runoff is slow, and the erosion hazard is low. These soils have developed horizons with various stages of silica cementation. These soils are light colored and contain soluble salts. Aeric Halaquepts (Umberland and Reese series) represent soils in these areas.

Remnants of flood plains, alluvial flats, and lake plains underwent similar processes of soil formation. Apparently during the early Holocene Epoch, these areas were poorly drained and subject to seasonal flooding as evidenced by the relict mottling and the low landscape position. The fluctuating water table combined with the volcanic ash-rich parent material and with the alkaline reaction produced horizons of firm durinode concentrations or silica cementation. As the climate became drier during mid-Holocene time, streams slowly downcut the flood plain areas, lakes receded in the bolson areas, and subtle dissection took place *(3, 19)*. This left stable remnants of flood plains, alluvial flats, and lake plains that had lower water tables and little or no flooding. Today, these soils are

moderately well drained or well drained, runoff is slow, and the hazard of erosion is low. They contain soluble salts throughout the soil profile. Durorthidic Torriorthents (Bubus series) on remnants of alluvial flats and lake plains and Aquic Duric Haploxerolls (Rixie series) on flood plain remnants represent soils in these areas.

Fan skirts are extensive in this area. They border the fan piedmonts and extend downslope and merge with alluvial flats. They are well drained, runoff is slow or medium, and the hazard of erosion is slight or moderate. These surfaces are relatively smooth and undissected. Durixerollic Camborthids (Rasille series), Typic Camborthids (Whirlo series), and Duric Camborthids (Broyles series) are examples of soils on fan skirts.

Fan piedmonts flank the mountain ranges. They are well drained, runoff is slow or medium, and the hazard of erosion is slight or moderate. Fan piedmonts are typically dissected because of an altered stream regimen resulting from past climatic changes or locally from block faulting. The dissection pattern has resulted in the formation of smooth, fan-piedmont-remnant summit areas, younger fan-piedmont-remnant side slopes, and very young inset fans along drainageways. Duric Natrargids (Oxcorel series) and Haploxerollic Durargids (Cherry Spring series) on fan-piedmont-remnant summits, Durixerollic Haplargids (Pineval series) on fan-piedmont-remnant side slopes, and Typic Torriorthents (Soolake series) on inset fans are examples of soils in these areas.

Most of the foothills and mountains show pronounced aspect-related microclimatic differences. Steep, north-facing slopes at lower elevations may exhibit soil profiles similar to all aspects in a higher elevation zone, but high elevation, steep, south-facing slopes may exhibit soil profiles similar to a lower elevation zone *(6, 13)*.

In the mountain ranges, the main characteristics are excessive relief. They are well drained, runoff is medium to very rapid, and the hazard of erosion is moderate or high. On partially stabilized mountain surfaces subject to a high rate of geologic erosion, soil development is mainly limited to the differentiation of primary horizons and the accumulation of organic matter. Lithic Xeric Torriorthents (Attella and Hopeka series) are examples of soils on less stable mountain slopes. Cambic or argillic horizons have formed in soils on more stable mountain surfaces where the rate of geologic erosion has been slower. Durixerollic Camborthids (Humdun series) are examples of soils that have a cambic horizon and Xerollic Haplargids (Trunk series) are examples of soils that have an argillic horizon that formed on more stable mountain slopes.

Biological Forces

Plants, animals, insects, and microflora are important biological forces that affect soil formation in the survey area. Although mammals, such as badgers and ground squirrels, and insects, such as cicadas and ants, have had some affect on soil development, plants appear to have had the most influence on the soils in this survey area.

The vegetation in the area has been particularly important in stabilizing the land surfaces so that soil formation could take place. It protects the surface from erosion and thus increases stability. In addition, plant roots help develop soil structure and aggregate stability.

Because of climatic differences, plants vary considerably in species and amounts as elevation increases. On flood plains where drainage is restricted, the dense growth of meadow vegetation has supplied the organic matter that gives the Fluvaquentic Haplaquolls (Paranat series) a dark colored A horizon.

On fan piedmonts, fan skirts, alluvial flats, and lake plains at low elevations, the main plants are drought- and salt-tolerant shrubs (22). Available moisture is scarce, and plants cover only a small part of the surface. They add little organic matter to the soils and provide little protection from the wind and sun. Salt-tolerant shrubs also tend to recycle salts from the deeper layers to the surface soil. An example of soils formed in these vegetation types are Duric Natrargids (Beoska series) on fan piedmonts and Aeric Halaquepts (Ocala series) on alluvial flats.

Fan piedmonts, fan skirts, and foothills at higher elevations support a plant cover of shrubs and grass that is transitional from desert shrubs. The density of plants is somewhat greater, soluble salts are deeper in the soil profile, and the A horizon of these soils has accumulated moderate amounts of organic matter. An example of soils formed in this vegetation type are Durixerollic Haplargids (Pineval series) on fan piedmonts and Xerollic Haplargids (Trunk series) on foothills.

The mountainous areas support denser stands of shrubs, grasses, and, in some places, trees. Because of the more abundant vegetation, the A horizon of the soils in these areas is thick, high in organic matter, and dark in color. An example of soils formed in this vegetation type are Aridic Argixerolls (Slaven series).

Parent Material

Parent material is the weathered rock or unconsolidated material from which soils form. The hardness, grain size, and porosity of the parent material and its mineralogic and chemical composition greatly

influence soil formation. The main sources of parent material in the survey area are sedimentary rock and associated metamorphic rock, intrusive and extrusive volcanic rock, colluvium, alluvium, lacustrine sediments, and eolian material.

The sedimentary rock in the area includes shale, chert, conglomerate, breccia, and localized areas of limestone and dolostone. It has supplied the parent material for soils in the central Shoshone and Toiyabe Ranges and the Augusta and Battle Mountains. Most of the materials contain minerals that weather to clay. Soils formed in this residuum on stable landscapes have a developed argillic horizon; for example, Lithic Argixerolls (Graley series) and Aridic Argixerolls (Slaven series). In some areas, soils have not been stable long enough for the formation of an argillic horizon; for example, Aridic Haploxerolls (Linrose series) and Lithic Xeric Torriorthents (Attella series).

The volcanic rock in the area includes andesite, rhyolite, ash flow tuffs, basalt, and small localized areas of granite. Volcanic rock is the parent material for the soils in the Fish Creek Mountains, Sheep Creek Range, and the northern and southern tips of the Shoshone Range. Volcanic rock contains appreciable quantities of minerals that weather to clay. Therefore, most soils formed in volcanic residuum on stable landforms have a developed argillic horizon. Examples of these soils are Aridic Argixerolls (Alyan series), Lithic Argixerolls (Chen series), Xerollic Durargids (Reina series), and Xerollic Haplargids (Bucan series).

The sedimentary and volcanic rocks are the major sources of colluvium, alluvium, and basin fill material in adjacent valleys. The pyroclastic material from these rocks strongly influences soils in the valleys throughout the survey area. The more siliceous rocks, particularly chert, tuff, and volcanic ash, are the major sources of silica for the cementation of soil horizons.

Some late Tertiary basin fill material has partially lithified and consolidated. It occurs primarily in the Fish Creek Basin and along two ancient alluvial divides, between Middle Reese Valley and Carico Lake Valley and between Grass Valley and the south end of Crescent Valley. This material consists of older lakebed deposits containing interbedded tuffaceous sediments, diatomaceous shale, siltstone, sandstone, and conglomerate. The deposits have been severely dissected to resemble low, rolling hills. The summits have been stable for short periods of time, and the side slopes are actively eroding and are too unstable to form diagnostic horizons. Xerollic Haplargids (Genaw series) are an example of soils on stable summits. Xeric Torriorthents (Puett series) and Typic Torriorthents (Perlor series), for example, are shallow, undeveloped soils on active side slopes.

Colluvium has accumulated on mountain slopes as a result of gravitational forces and mass wasting. It generally is poorly sorted, contains many rock fragments, and includes minerals that weather to clay. Many of the colluvial landscapes have not been stable long enough for the formation of an argillic horizon. Xerollic Camborthids (Minat series), for example, are soils in colluvial positions.

Alluvium deposited from mixed rock sources on fan piedmonts is mostly loamy textured and contains pebbles, cobbles, and stones. It is porous and contains minerals that weather to clay and soluble silica. Haplic Nadurargids (Golconda series) and Xerollic Durargids (Buffaran series) are examples of soils that have an argillic horizon over a duripan that formed on stable fan piedmonts.

Some alluvium is deposited below the fan piedmonts as fan skirts. It consists of loamy and silty material mixed with additions of loess that contains high amounts of volcanic ash. Some localized areas of alluvium along drainageways contain pebbles, cobbles, and stones. Soils on fan skirts typically have horizons of silica accumulation. Some examples of alluvial soils are Durorthidic Torriorthents (Misad series) and Duric Camborthids (Relley series).

Some alluvium is deposited below the fan skirts as alluvial flats or flood plains. It consists of silty and clayey material, and in some areas it contains soluble salts. Although this alluvial material contains weatherable minerals, alluvial soils are young and exhibit limited soil development. Aeric Halaquepts (Ocala series) on alluvial flats and Fluvaquentic Haplaquolls (Humboldt series) on flood plains, for example, are alluvial soils.

Sandy eolian materials are of limited extent and mainly in the Buffalo, Grass, and Humboldt River Valleys and on low hills north of Battle Mountain. Sandy textured soils, such as Xeric Torripsamments (Goldrun series), have formed on stabilized dunes and on less active sand sheets associated with fan piedmonts and low hills. Typic Torripsamments (Isolde series) formed in wind-active areas on semistabilized dunes and dunes superimposed over beach plains.

Volcanic ash, presumed to be Mazama ash, and alluvium deposited following the ashfall were the sources of soluble silica in the formation of durinodes and duripans in the soils of this survey area. The Mazama ash *(7)* has been buried and preserved as thin strata in soils along the Reese and Humboldt Rivers. The soils that Mazama ash influenced, for example, are Duric Camborthids (Antel series) on fan skirts, Aeric Halaquepts (Wendane series) on alluvial flats, and Aquic Duric Haploxerolls (Rixie series) on flood plains.

Time

Time is required for rock and mineral weathering and soil horizon formation. Soil scientists and field geologists, however, do not well understand the interaction of time and other soil-forming factors. Some believe the weathering of parent material and the development of soil profiles have been essentially continuous and have changed little in rate throughout Quaternary time *(20, 21, 24, 29)*. Recently in differentiating Quaternary deposits, geologists have proposed that soil development, instead of proceeding continuously at the same rate, has taken place intermittently at a rapid rate *(16, 17, 18, 23)*.

The present desert climate began at the start of the Pleistocene *(4)*. However, both precipitation and temperature have fluctuated widely. During cooler and wetter pluvial periods, increasing precipitation and cooler temperatures increased runoff, causing increased erosion, mass wasting, and deposition. These climatic conditions reduced evaporation in the basins, and permanent lakes developed in the bolson floors. These pluvial lake cycles corresponded with intervals of glaciation in the Sierra and Ruby Mountains. Maximum eolian activity usually marked a change to a cool but drier climate at the beginning of the interglacial periods. This climate change led to a warm, dry period and then to a warm, wet period, during both of which soil forming was maximal *(3, 5, 17, 18)*. These interglacial peaks of soil-forming climate occurred world wide; therefore, weathering profiles that formed in different regions during soil-forming maxima can be correlated and are "time-parallel."

These soil-forming maxima usually followed periods of intense erosion and deposition. Afterwards, the land surface stabilized when the climatic factors were favorable for a greatly accelerated rate of chemical weathering. Geologists have developed the technique of mapping soil stratigraphic units that use weathering profiles as stratigraphic markers to differentiate and correlate Quaternary deposits. This process is termed soil stratigraphy *(18)*. Soils "time-parallel" to those formed on previously researched stratigraphic surfaces have been detailed in fieldwork in other parts of Nevada *(5, 12, 15)*. Comparing soils in this survey area to similarly developed soils in researched areas has provided a practical technique to help establish local "time-parallel" soils. Volcanic ash falls and radiocarbon dating from nearby archaeological sites also provide valuable stratigraphic controls. Although soils apparently developed during each soil-forming maxima, subsequent depositions may have eroded away or covered representative profiles. Therefore, gaps occur in our time-soil profile sequence. For purposes of this discussion, the time-stratigraphic names of Birkland will be used: Holocene, Wisconsinan, and pre-Wisconsinan age *(6)*.

Holocene Soils

Holocene-age soils range from recently eroded or deposited material to soils exhibiting characteristics similar to soils bearing the stratigraphic markers described below.

Hawley and Wilson *(5)* proposed that the distinct bed of Mazama volcanic ash *(7)* along the Humboldt River overlying late-Wisconsinan deposits represents a tentative marker for the Pleistocene-Recent boundary in the Winnemucca area. This widely spread volcanic ash bed extends into Lander County. It is preserved and interbedded with flood plain deposits along the Humboldt River (Wendane series) Meander Belt. It is also interbedded with young alluvium on fan skirts in Antelope Valley (Antel series). These soils and similar "time-parallel" soils are less than 6,600 years old. Mifflin and Wheat proposed that the age of shoreline features in Buffalo and Grass Valleys be correlated with that of the last Lake Lahontan high lake stand estimated at 11,000 years before present, or very late in the Wisconsinan Glaciation. After the lakes receded, Durorthidic Torriorthents soils (Bubus series) formed on geomorphic surfaces and Aquic Durorthidic Torriorthents (Gund series) formed below those shoreline features. Many of these soils are still aggrading. These soils, similar "time-parallel" soils, and soils exhibiting less soil development are all considered to be of Holocene age. Soils in the area are arrayed according to the strength of expression of their soil properties and horizons.

The youngest soils in the area formed in very recently aggraded material or in material that erosion recently exposed. These soils do not have a diagnostic horizon and essentially resemble the original parent material. Included among these soils are Aquic Torriorthents (Needle Peak series), which formed in recent alluvium; Typic Torripsamments (Isolde series), subject to eolian activity on semistabilized sand dunes; and Xeric Torriorthents (Puett series), which formed in soft, semiconsolidated Tertiary sediments on low, rolling hills where geologic erosion has been active.

Somewhat older than the youngest soils are the soils formed in alluvium on axial stream flood plains or slowly aggrading inset fans, or those formed on relatively recently eroded mountain slopes. These soils have been stable long enough to accumulate organic matter and form a mollic epipedon. They do not have a cambic, argillic, natric, or calcic horizon, or durinodes or duripans. They are probably less than about 1,000

years old. Some examples of these soils are Fluvaquentic Haploxerolls (Rose Creek series) on axial stream flood plains; Cumulic Haplaquolls (Welch series) on inset fans in narrow mountain valleys; and Aridic Haploxerolls (Loncan series) on mountain side slopes.

Stable Holocene land surfaces less than about 8,000 years and more than 2,000 years old are extensive in the survey area. These soils formed in parent material containing appreciable amounts of volcanic glass. With the volcanic ash as a source of soluble silica along with the alkaline reaction and fluctuating water table, durinodes and layers of incipient silica cementation probably formed relatively rapidly. Examples of soils exhibiting horizons with variable amounts of volcanic ash-influenced silica accumulation are Aquic Duric Haploxerolls (Rixie series) on axial stream flood plains; Aquic Durorthidic Torriorthents (Gund series) on lake plains; Aeric Halaquepts (Reese series) on alluvial flats; and Durorthidic Torriorthents (Bubus series) on alluvial flat remnants. Early to mid-Holocene-age soils formed on inset fans, fan skirts, beach terraces, and foothills, have a cambic horizon, and, in some areas, have silica cementation. Examples of these soils are Durixerollic Camborthids (Rasille series) on fan skirts; Xerollic Camborthids (McConnel series) on beach terraces; Typic Camborthids (Wholan series) on inset fans; and Xerollic Camborthids (Minat series) on foothills.

The landscapes in some areas are less stable and have been eroded during late Wisconsinan time, thus exposing relict duripans. Loess and loamy alluvium from surrounding land surfaces blanketed these exposed subsurface horizons to a shallow depth during middle to early Holocene time. Soil development in recent alluvium is minimal. Xerollic Durorthids (Chiara series) on fan piedmonts and Typic Durorthids (Osoll series) on foothills, for example, formed in alluvium.

Wisconsinan-Age Soils

Deposits of Wisconsinan age are widely distributed in the survey area. Early Wisconsinan fan and stream terrace deposits were generally more extensive and coarser than the late Wisconsinan-early Holocene deposits. A widespread veneer of loess covered these coarse deposits during middle Wisconsinan time. Typically, these deposits lie on higher geomorphic surfaces than the Holocene deposits and are now dissected. Morrison proposed a weathering profile, called the Churchill Soil in the Lake Lahontan area, as a useful marker for differentiating the early Wisconsinan deposits from the late Wisconsinan deposits *(17)*. Hawley and Wilson tentatively correlated soils in the Winnemucca area to this aged surface *(15)*. Soils in Lander County that consist of loess-influenced alluvium over coarse alluvium have similar soil morphological characteristics to the soil in the Winnemucca area. These soils, Duric Natrargids (Beoska series), and "time-parallel" soils exhibiting similar soil development are considered mid-Wisconsinan age.

Wisconsinan and pre-Wisconsinan-age soils represent about half of the soil series mapped in the survey area. These soils occur extensively on mountains, plateaus, foothills, and fan piedmonts. The extensive areas of these kinds of soils show that major erosional and depositional events have not taken place. Rather, such events have been minor in extent since late Pleistocene time when the climate stabilized.

Stable, late Wisconsinan or early Holocene land surfaces are likely not extensive in this area. Soils that formed on these surfaces have a thin, weak, or minimal argillic horizon. Xerollic Haplargids (Genaw series), which have a minimal argillic horizon that soft bedrock underlies at a depth of less than 20 inches, is an example of soils formed on this aged surface.

Stable, middle Wisconsinan-age land surfaces are very extensive. Soils formed on this aged surface have a dominantly fine-loamy or loamy-skeletal argillic or natric horizon. Soils that have not been subject to excessive leaching also have horizons of silica accumulation below the argillic or natric horizon. Durixerollic Haplargids (Allor series) are examples of soils that have an argillic or a duric horizon on fan piedmonts; Duric Natrargids (Ricert series) are examples of soils with natric and duric horizons on fan piedmonts; Aridic Argixerolls (Reluctan series) and Typic Argixerolls (Clanalpine series) are examples of soils that have an argillic horizon and that are on mountain slopes.

Stable, early Wisconsinan-age land surfaces are extensive. These soils have a well developed argillic horizon. They are on older, stable land surfaces where the original subsurface horizons neither have been eroded nor deeply buried under sediment. Haplic Nadurargids (Golconda series) that have a thick natric horizon and a thin duripan are examples of soils on fan piedmonts. Xerollic Haplargids (Vanwyper series), which have a clayey-skeletal argillic horizon formed in residuum, are an example of soils on foothills. Aridic Argixerolls (Walti series) have a clayey argillic horizon formed in residuum and are an example of soils on mountain slopes.

Pre-Wisconsinan-Age Soils

Pre-Wisconsinan alluvial deposits are of limited exposure in the soil survey area. Morrison recognized two pre-Wisconsinan depositions and weathering profiles; one correlative with the Kansan Glaciation (pre-

Cocoon soil) and a younger one, somewhat less dissected, at somewhat lower elevations correlative with the Illinois Glaciation (Cocoon soil) *(17)*. Examples of "time-parallel" soils with these weathering profiles in this survey area are the Buffaran series and the Cherry Spring series, respectively.

Stable, pre-Wisconsinan-age surfaces are moderately extensive in this area. These surfaces are deeply dissected and are limited to fan piedmont remnants, partial ballenas, and isolated mountain side slopes. The land surfaces since dissection have been relatively stable, and the soils developed on these remnant surfaces are considered the oldest in the survey area. Xerollic Durargids (Buffaran series) and Xerollic Nadurargids (Cortez series) are examples of soils on fan piedmont remnants. These soils generally have a thick, clayey argillic or natric horizon and a thick, indurated duripan. Xerollic Paleargids (Zoesta series), which have a thick, clayey argillic horizon that has an abrupt upper boundary, are an example of soils formed on partial ballenas. Aridic Palexerolls (Floer series) are an example of soils formed on mountain side slopes.

Soil horizon thickness and other characteristics of the local "time-parallel" soils described above are compared with soils in this survey area to estimate relative age relationships. The amount of time required for soil formation depends on the other soil-forming factors.

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Glossary

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted. The degrees of alkalinity, expressed as exchangeable sodium percentage, are:

Nonalkali	less than 15
Slightly alkali	15 to 40
Strongly alkali	more than 40

Alluvial fan. A semiconical, or fan-shaped, constructional major landform that is mainly stratified alluvium with debris flow deposits in some areas. It is on the upper margin of a piedmont slope, and its apex is a source of alluvium debouching from a mountain valley into an intermontane basin. Also, a generic term for similar landforms in various other landscape positions.

Alluvial flat. The nearly level alluvial surface between a piedmont slope and the playa of a bolson or the axial-stream flood plain of a semibolson. This landform can include both recent and relict components.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal-unit-month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Area reclaim (as a restrictive feature). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Back slope. The slope component that is the steepest, straight to concave or merely concave, middle portion of an erosional slope.

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Ballena. A major landform comprising distinctively round-topped ridgeline remnants of fan alluvium. The broadly rounded shoulders of the ridge meet from either side to form a narrow crest and merge smoothly with the concave back slopes. In ideal examples, the slightly concave foot slopes of adjacent ballenas merge to form a smoothly rounded drainageway.

Bar (offshore and barrier). A component landform comprised of elongated, commonly curving, low ridges of well sorted sand and gravel that stand above the general level of a bolson floor. It is the result of the wave action of a Pleistocene lake.

Basal area. The area of a cross section of a tree. It is a measure of stand density, commonly expressed in square feet. For pinyon pine and juniper stands, it is the section at a height of 1 foot and is measured outside the bark.

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Basin. A general term for an intermontane basin, a

bolson, a semibolson, an area of centripetal drainage, or a structural depressional area.

Basin floor. The lowermost, nearly level major physiographic part of a bolson or semibolson. It includes all alluvial, eolian, and erosional landforms that are below the piedmont slopes.

Basin-floor remnant. A generally flat-topped erosional remnant of a basin floor that has been dissected by an axial stream.

Beach plain. A major landform of bolson floors comprised of numerous, closely spaced offshore bars and intervening lagoons. It is the result of a receding Pleistocene lake.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bolson. An internally drained intermontane basin.

Bolson floor. The specific identification of the floor of a bolson, as compared with the floor of a semi-bolson; both are basin floors.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Brush management. Use of mechanical, chemical, or biological methods to reduce or eliminate competition of woody vegetation to allow understory grasses and forbs to recover, or to make conditions favorable for reseeding. It increases production of forage, which reduces erosion. Brush management may improve the habitat for some species of wildlife.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Cemented pan (as a restrictive feature). A cemented pan is too close to the surface for the specified use.

Channel. The bed of a single or braided waterway that commonly is barren of vegetation. Channels form in young alluvium. They may be enclosed by banks, or they may be splayed across a fan surface and slightly mounded above it. They may include bars and dumps, consisting of cobbles and stones. Channels, except flood plain playas, are landform elements.

Chemical treatment. Control of unwanted vegetation by use of chemicals.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter, in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clay skin. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay film.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that contains a specified amount of rounded or partially rounded rock fragments 3 to 10 inches (7.5 to 25 centimeters) in diameter. The percentage of these fragments, by volume, is expressed as:

Cobbly	15 to 35
Very cobbly	35 to 60
Extremely cobbly	more than 60

Colluvium. Soil material, rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Component landform. A feature of the Earth's surface that is part of a major landform and was created by partial dissection of the major landform or by alluvial or eolian accretion. A component landform is the smallest type of landform that can be described as a single unit. Its morphological parts are called landform elements, and a side slope element can be subdivided into slope components.

Conglomerate. A coarse grained, clastic rock composed of rounded to subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. If soil improving crops and practices used in the system more than offset the soil depleting crops and deteriorating practices, then it is a good conservation cropping system. Cropping systems are needed on all tilled soils. Soil improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use

of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:
Loose.—Noncoherent when dry or moist; does not hold together in a mass.
Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.
Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.
Plastic.—Readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.
Sticky.—Adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.
Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
Soft.—When dry, breaks into powder or individual grains under very slight pressure.
Cemented.—Hard; little affected by moistening.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coppice dune. A small dune of fine-earth soil material stabilized around shrubs or small trees.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crest. The slope component comprising a very narrow, commonly linear top of an erosional ridge, hill, mountain, etc.

Cropping system. Growing crops using a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cutbanks cave (as a restrictive feature). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deep to water (as a restrictive feature). The soil is deep to a permanent water table during dry periods.

Deferred grazing. Postponing grazing or arresting grazing for a prescribed period.

Depth to rock (as a restrictive feature). Bedrock is too near the surface for the specified use.

Desert pavement. A layer of gravel or coarser fragments on a desert soil surface that was emplaced by upward movement of fragments from underlying sediment or remains after finer particles have been removed by running water or wind.

Desert varnish. A glossy sheen or coating on stones and gravel in arid regions.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:
Excessively drained.—These soils have very high and high hydraulic conductivity and low water holding capacity. They are not suited for crop production unless irrigated.
Somewhat excessively drained.—These soils have high hydraulic conductivity and low water holding capacity. Without irrigation, only a narrow range of crops can be grown and yields are low.
Well drained.—These soils have intermediate water holding capacity. They retain optimum amounts of moisture, but they are not wet close enough to the surface or long enough during the growing season to adversely affect yields.
Moderately well drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or yields of some field crops are adversely affected unless artificial drainage is provided. Moderately well drained soils commonly have a layer with low hydraulic conductivity, a wet layer relatively high in the profile, additions of water by seepage, or some combination of these.
Somewhat poorly drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or crop growth is markedly restricted unless artificial drainage is provided. Somewhat poorly drained soils commonly have a layer with low hydraulic

conductivity, a wet layer high in the profile, additions of water through seepage, or a combination of these.

Poorly drained.—These soils commonly are so wet at or near the surface during a considerable part of the year that field crops cannot be grown under natural conditions. Poorly drained conditions are caused by a saturated zone, a layer with low hydraulic conductivity, seepage, or a combination of these.

Very poorly drained.—These soils are wet to the surface most of the time. They are wet enough to prevent the growth of important crops (except rice) unless artificially drained.

Drainage, surface. Runoff, or surface flow of water, from an area.

Draw. A small stream valley, generally more open and with broader bottom land than a ravine or gulch.

Droughty (as a restrictive feature). The soil holds too little water for plants during dry periods.

Duff. A term used to identify a generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Effervescence. The quality of a soil measured when drops of diluted (1:10) hydrochloric acid (HCl) are added to the soil. The ratings are as follows:

Very slightly effervescent	few bubbles
Slightly effervescent	bubbles readily
Strongly effervescent	bubbles form low foam
Violently effervescent	bubbles form thick foam quickly

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Erodes easily (as a restrictive feature). Water erodes the soil easily.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or other animal activities or of a catastrophe in nature; for example, fire that exposes the surface.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and produced by erosion or faulting. Synonym: scarp.

Excess fines (as a restrictive feature). Excess silt and clay are in the soil. The soil does not provide a source of gravel or sand for use in construction.

Excess salt (as a restrictive feature). The soil has excess water-soluble salts that restrict the growth of most plants.

Excess sodium (as a restrictive feature). The soil has excess exchangeable sodium that restricts the growth of plants.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the Earth's surface.

Fan apron. A component landform consisting of a sheetlike mantle of relatively young alluvium that partially covers the surface of an older fan piedmont or, in some places, an alluvial fan. A fan apron buries a pedogenic soil.

Fan collar. A component landform comprised of a thin, short, relatively young mantle of alluvium along the very upper margin of a major alluvial fan at a mountain front. The mantle somewhere buries a pedogenic soil that can be traced to the edge of the fan collar where it emerges as the land surface, or relict soil.

Fan piedmont. The most extensive major landform of most piedmont slopes. It is formed by the lateral coalescence of mountain-front alluvial fans into one generally smooth slope and by accretion of fan aprons. Fan piedmonts commonly are complexes of many component landforms.

Fan remnant. A generic term for a component landform that is the remainder of various older fans that have been dissected (erosional fan remnants) or partially buried (nonburied fan remnants). Erosional fan remnants have a flattish summit that consists of a relict fan surface; nonburied fan remnants consist entirely of a relict fan surface.

Fan remnants may be specifically identified as fan piedmont remnants, fan skirt remnants, inset fan remnants, etc.

Fan remnant side slope. A landform element comprised of the relatively young erosional slope around the sides of an erosional fan remnant. It is composed of shoulders, back slopes, and foot slopes.

Fan skirt. A major landform comprised of laterally coalescing, small alluvial fans that originate from gullies that are cut into or extend from inset fans of a fan piedmont and merge along their toe slopes with the basin floor. Fan skirts are smooth or only slightly dissected.

Fast intake (as a restrictive feature). The movement of water into the soil is rapid.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Fine textured soil. Sandy clay, silty clay, or clay.

Flooding (as a restrictive feature). The soil is flooded by moving water from stream overflow, runoff, or high tides.

Flood plain. The transversely level floor of an axial stream of a semibolson or of a major desert stream valley that is occasionally or regularly alluviated by the stream overflowing its channel during periods of flooding.

Flood plain playa. A component landform consisting of very low gradient, barren, axial stream segments in an intermontane basin. It is subject to broad and shallow floods and is veneered with barren, fine textured sediment that crusts. A flood plain playa commonly is segmented by transverse, narrow bands of vegetation, and it may alternate with ordinary, narrow or braided channel segments.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Foot slope. The relatively gently sloping, slightly concave slope component of an erosional slope that is at the base of the back slope component. Synonym: pediment.

Forb. Any herbaceous plant not a grass or a sedge.

Frost action (as a restrictive feature). The moisture in the soil freezes and thaws. Frost action can damage roads, buildings, and other structures.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that contains a specified amount of rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter. The amount of these fragments, by volume, is expressed as—

Gravelly	15 to 35 percent
Very gravelly	35 to 60 percent
Extremely gravelly	more than 60 percent

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by silica or calcium carbonate.

Hard rock. Rock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to pack (as a restrictive feature). The soil is difficult to compact.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well-defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C

horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the number 2 precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors of predicting runoff. The four hydrologic groups are:

Group A.—Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B.—Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C.—Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D.—Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Inset fan. The flood plain of a commonly ephemeral stream that is confined between fan remnants, basin floor remnants, ballenas, or closely opposed fan toe slopes. Its transversely level cross section is evidence of alluviation of a fluve. It is wide enough that raw channels cover only a fraction of its surface.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Irrigation. Application of water to soils to assist in production of crops.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A major landform of some bolson floors that is nearly level and consists of fine textured, stratified bottom sediment of a Pleistocene lake.

Lake plain terrace. A somewhat elevated area and component landform of a lake plain.

Landform element. The morphological part of a component landform. Side slope landform elements may be divided into slope components.

Large stones (as a restrictive feature). The soil has rock fragments that are 3 inches (7.5 centimeters) in diameter or more.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Major landform. A subdivision of the piedmont slope or basin floor major physiographic part that reflects a major morphogenetic process taking place over a long period of time or that is the result of a special erosional or depositional process. Many major

landforms are dissected, and their original area is occupied by component landforms.

Major physiographic part. The very large part of an intermontane basin that is characterized by dominant slope and position and is comprised of major landforms (i.e., steeply sloping mountains that stand above less sloping piedmonts that in turn grade to nearly level basin floors).

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides and considerable bare-rock surface. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Mountain valley fan. A major landform that is the result of alluvial filling of a mountain valley or intramontane basin by coalescent valley-side slope fans whose toe slopes meet from either side of the valley along an axial drainageway. It is an extension of the upper piedmont slope into mountain valleys. Most mountain valley fans have been dissected.

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color in hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Observed rooting depth. Depth to which roots have been observed to penetrate.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan* or *claypan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pediment. The foot slope component of an erosional slope.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (as a restrictive feature). The slow movement of water through the soil, adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (as a restrictive feature). Water moving through the soil forms subsurface tunnels or pipelike cavities.

Plain. A flat, undulating or rolling area, large or small, that includes few prominent hills or valleys. It generally is at a low elevation in relation to surrounding areas, and it may have considerable overall slope and local relief.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. An extensive upland mass with a relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Playa. An ephemerally flooded, barren area on a basin floor that is veneered with fine textured sediment and acts as a temporary or final sink for drainage water.

Ponding. Standing water on soils in closed depressional areas. The water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets (as a restrictive feature). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Potential native plant community. The plant community on a given site that will be established if present environmental conditions continue to prevail and the site is properly managed.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. The application of fire to land under such conditions of weather, soil moisture, and time of day as presumably will result in the intensity of heat and spread required to accomplish specific forest management, wildlife, grazing, or fire hazard reduction purposes.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This increases the vigor and reproduction of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relict. Old, or remaining from previous times; in the present context, of Pleistocene age.

Relief. The elevations or inequalities of a land surface, considered collectively.

Remnant. The remainder of a larger landform or of a land surface that has been dissected or partially buried.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material

that accumulated as consolidated rock disintegrated in place.

Ridgeline remnant. A narrow ridge that has a fully rounded crest and is accordant with the crests of similar, nearby ridges. Together these accordant crests approximately mark the position of a pre-existing land surface that has been destroyed by dissection.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (as a restrictive feature). The soil is shallow to a layer that greatly restricts roots; shallow root zone.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water. Six classes of runoff are recognized:

Ponded.—Little of the precipitation and run-on escapes as runoff, and free water stands on the surface for significant periods. The amount of water that must be removed from ponded areas by movement through the soil, by plants, or by evaporation is usually greater than the total rainfall. Ponding normally occurs in level to nearly level depressional areas, and the water depth may fluctuate greatly.

Very slow.—Surface water flows away slowly, and free water stands on the surface for long periods or immediately enters the soil. Most of the water passes through the soil, is used by plants, or evaporates. The soils commonly are level or nearly level or are very open and porous.

Slow.—Surface water flows away slowly enough that free water stands on the surface for moderate periods or enters the soil rapidly. Most of the water passes through the soil, is used by plants, or evaporates. The soils commonly are either nearly level or very gently sloping or they are steeper but absorb precipitation very rapidly.

Medium.—Surface water flows away fast enough that free water stands on the surface for only short periods. Part of the precipitation enters the soil and is used by plants, is lost by evaporation, or moves into underground channels. The soils commonly are either nearly level or gently sloping and absorb precipitation at a moderate rate or they are steeper but absorb water rapidly.

Rapid.—Surface water flows away fast enough that the period of concentration is brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly moderately steep or steep, and they have a moderate to slow rate of absorption.

Very rapid.—Surface water flows away so fast that the period of concentration is very brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly steep or very steep, and they absorb precipitation slowly.

Run-on. Soil moisture received as runoff from adjacent areas.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium. The conductivity of extract, in millimhos per centimeter, is expressed as:

Nonsaline	0 to 4
Slightly saline	4 to 8
Moderately saline	8 to 16
Strongly saline	more than 16

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sand dune. A component landform made up of eolian, sand-sized mineral particles. Dunes commonly are on the leeward side of a Pleistocene lakebed.

Sand sheet. A major landform comprising an extensive, several-foot-thick layer of eolian sand from pluvial lake beaches, sometimes partly redeposited by water. It is spread across alluvial flats, onto piedmont slopes, or even over low mountains and has an undulating and commonly duned surface.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (as a restrictive feature). The movement of water through the soil. Seepage adversely affects the specified use of the soil.

Semibolson. An externally drained intermontane basin.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the substratum. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shoulder. The convex slope component at the top of an erosional side slope.

Shrink-swell (as a restrictive feature). The soil shrinks when dry and swells when wet.

Side slope. The erosional slope around the sides of an erosional fan remnant, hill, ballena, mountain, etc. It is composed of shoulders, back slopes, foot slopes, and toe slopes. Also, the planimetrically linear parts of the slopes around a digitally dissected fan remnant or hill, or other landform, as compared with the planimetrically convex nose slope and concave head slope parts.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Site index. A designation of the quality of a forest site. For pinyon pine and juniper stands, it is based on tree diameter at a height of 1 foot height and the spacing between trees.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey the following slope classes are recognized:

Nearly level	0 to 2 percent
Gently sloping	2 to 4 percent
Moderately sloping	4 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 30 percent
Steep	30 to 50 percent
Very steep	50 to 75 percent
Extremely steep	more than 75 percent

Slope (as a restrictive feature). The slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specified use.

Slope component. A morphological element of an erosional slope and a morphological subdivision of the side slope landform element.

Slow intake (as a restrictive feature). The slow movement of water into the soil.

Small stones (as a restrictive feature). The soil has rock fragments that are less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are:

Nonsodic	less than 13
Slightly sodic	13 to 25
Moderately sodic	25 to 46
Strongly sodic	more than 46

Soft rock. Rock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil blowing (as a restrictive feature). The soil is easily moved by wind.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the substratum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60

centimeters) in diameter if rounded or 6 to 15 inches (15 to 38 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony soil material. Material, commonly a subsurface layer, that contains a specified amount of rock fragments that are mainly 10 to 24 inches in diameter. The amount of these fragments, by volume, is expressed as:

Stony	15 to 35 percent
Very stony	35 to 60 percent
Extremely stony	more than 60 percent

Stream terrace. A transversely level erosional remnant of a former axial stream or major desert stream flood plain that slopes in the same direction as the adjacent, incised stream and is underlain by well-sorted, stratified sand and gravel or by loamy or clayey sediment.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Substratum. The part of the soil below the solum.

Summit. The flattish top of an erosional fan remnant, hill, mountain, or other landform. The term is used for both a landform element and a slope component.

Tail water. The water just downstream of a structure.

Talus. Rock fragments of any size or shape, commonly coarse and angular, derived from and lying at the base of a cliff or very steep, rock slope. The accumulated mass of such loose, broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. Any part of a general slope that stands above a short, steep scarp and has a generally flat, nearly level or gently sloping summit. It may have another short scarp above the summit. Synonym: bench.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (as a restrictive feature). Otherwise suitable soil material too thin for the specified use.

Toe slope. The lowest part of a foot slope component of an erosional slope. It is distinguished from the upper part of a foot slope by a greater accumulation of pedisediment. Also, the lowest and most gently sloping part of a slope.

Too arid (as a restrictive feature). The soil is dry most of the time, and vegetation is difficult to establish.

Too clayey (as a restrictive feature). The soil is slippery and sticky when wet and is slow to dry.

Too sandy (as a restrictive feature). The soil is soft and loose; it is droughty and low in fertility.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

Valley. An elongated depressional area cut by stream erosion and the associated water erosion of its side slopes (stream valley). Also used for intermontane basins.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water-supplying capacity. The total amount of water available in the soil for plant growth in a normal year from precipitation, from run-on, and from a capillary fringe minus runoff.

Water table. The upper level of ground water or that level below which the soil is saturated.

Water table (perched). The water table of a saturated layer of soil that is separated from an underlying saturated layer by an unsaturated layer.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the Earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Wetness (as a restrictive feature). The soil is wet during the period of use.

Appendix

Criteria Used in Rating Soils for Selected Uses

Daily Cover for Landfill

Property	Limits			Restrictive feature
	Good	Fair	Poor	
1. USDA texture	---	---	Ice	Permafrost.
2. Depth to bedrock (inches)	>60	40-60	<40	Depth to rock.
3. Depth to cemented pan (inches)	>60	40-60	<40	Cemented pan.
4. Unified [1]	---	---	SP, SW, SP-SM, SW-SM, GP, GW, GP-GM, GW-GM	Seepage.
5. USDA texture [1 2 3]	---	CL, SICL, SC	SIC, C	Too clayey.
6. USDA texture [1]	---	LCOS, LS, LFS, VFS	S, FS, COS, SG	Too sandy.
7. Unified [1 2]	---	---	OL, OH, CH, MH	Hard to pack.
8. Coarse fragments (percent) [1 4]	<25	25-50	>50	Small stones.
9. Fraction greater than 3 inches (percent by weight) [1 4]	<25	25-50	>50	Large stones.
10. Slope (percent)	<8	8-15	>15	Slope.
11. Depth to high water table (feet)	--- >3.5	--- 1.5-3.5	+ <1.5	Ponding. Wetness.
12. Unified [1]	---	---	PT	Excess humus.
13. Layer thickness (inches)	>60	40-60	<40	Thin layer.
14. Soil reaction (pH) [1]	---	---	<3.6	Too acid.
15. Salinity in the upper 60 inches (mmhos/cm) [3]	---	---	>16	Excess salt.
16. Sodium adsorption ratio (great group) [1 3]	---	---	>12 (halic, natric, alkali phases)	Excess sodium.
17. Carbonates	---	---	([5])	Excess lime.

[1] Thickest layer between 10 and 60 inches.

[2] If in kaolinitic family, rate one class better if experience confirms.

[3] Disregard in all Aridisols except Salorthids and Aquic intergrades and all Torri great groups of Entisols except Aquic.

[4] Sum (100 minus percent passing No. 10 sieve) and fraction greater than 3 inches. Use dominant condition for restrictive feature.

[5] If the amount of carbonate is so high that it restricts the growth of plants, rate "Poor—excess lime."

Shallow Excavations

Property	Limits			Restrictive feature
	Slight	Moderate	Severe	
1. USDA texture	---	---	Ice	Permafrost.
2. Depth to bedrock (inches):				
Hard	>60	40-60	<40	Depth to rock.
Soft	>40	20-40	<20	Depth to rock.
3. Depth to cemented pan (inches):				
Thick	>60	40-60	<40	Cemented pan.
Thin	>40	20-40	<20	Cemented pan.
4. USDA texture (20 to 60 inches)	---	SI [1]	COS, S, FS, VFS, LCOS, LS, LFS, LVFS, G, SG	Cutbanks cave.
5. USDA texture (20 to 60 inches)	---	C, SIC	---	Too clayey.
6. Soil order	---	---	Vertisols	Cutbanks cave.
7. Bulk density (g/cc)	---	>1.8	---	Dense layer.
8. Unified (20 to 60 inches)	---	---	OL, OH, PT	Excess humus.
9. Fraction greater than 3 inches (percent by weight) [2]	<25	25-50	>50	Large stones.
10. Depth to high water table (feet)	--- >6	--- 2.5-6	+ 0-2.5	Ponding. Wetness.
11. Flooding	None, rare, protected.	Common	---	Flooding.
12. Slope (percent)	0-8	8-15	>15	Slope.

[1] In areas of loess, rating should be *slight.*
[2] Weighted average to 40 inches.

Local Roads and Streets

Property	Limits			Restrictive feature
	Slight	Moderate	Severe	
1. USDA texture	---	---	Ice	Permafrost.
2. Depth to bedrock (inches):				
Hard	>40	20-40	<20	Depth to rock.
Soft	>20	<20	---	Depth to rock.
3. Depth to cemented pan (inches):				
Thick	>40	20-40	<20	Cemented pan.
Thin	>20	<20	---	Cemented pan.
4. AASHTO group index number [1] [2]	0-4	5-8	>8	Low strength.
5. AASHTO [1] [3]	---	A-4, A-5	A-6, A-7, A-8	Low strength.
6. Depth to high water table (feet)	---	---	+	Ponding.
	>2.5	1.0-2.5	0-1.0	Wetness.
7. Slope (percent)	0-8	8-15	>15	Slope.
8. Flooding	None, protected.	Rare	Common	Flooding.
9. Potential frost action	Low	Moderate	High	Frost action.
10. Shrink-swell potential [1]	Low	Moderate	High	Shrink-swell.
11. Fraction greater than 3 inches (percent by weight) [4]	<25	25-50	>50	Large stones.

[1] Thickest layer between 10 and 40 inches.

[2] GIN = (F-35)[.2 + .005(LL-40)] + .01 (F-15)(PI-10) where F = percent passing No. 200 sieve. If F is <35 and PI is >11, use only part 2 of equation. Use median values.

[3] Use AASHTO classification only when group index is not known.

[4] Weighted average to 40 inches.

Roadfill

Property	Limits			Restrictive feature
	Good	Fair	Poor	
1. USDA texture	---	---	Ice	Permafrost.
2. Depth to bedrock (inches)	>60	40-60	<40	Area reclaim.
3. AASHTO group index number [1] [2]	0-4	5-8	>8	Low strength.
4. AASHTO [2] [3]	---	A-4	A-5, A-6, A-7, A-8	Low strength.
5. Layer thickness (inches)	>60	30-60	<30	Thin layer.
6. Fraction greater than 3 inches (percent by weight) [4]	<25	25-50	>50	Large stones.
7. Depth to high water table (feet)	>3	1-3	<1	Wetness.
8. Slope (percent)	0-15	15-25	>25	Slope.
9. Shrink-swell potential [2]	Low	Moderate	High	Shrink-swell.

[1] GIN = (F-35)[.2 + .005(LL-40)] + .01 (F-15)(PI-10) where F = percent passing No. 200 sieve. If F is <35 and PI is >11, use only part 2 of equation. Use median values.

[2] Evaluate the thickest layer between 10 and 60 inches and also the bottom layer. Choose the best rating. When rating is based on bottom layer, verify thickness.

[3] Use AASHTO classification only when group index is not known.

[4] Weighted average to 40 inches.

Sand

Property	Limits		Restrictive feature
	Probable source	Improbable source	
1. Unified [1]	SW, SP, SW-SM, SP-SM	---	---
	GW, GP, GW-GM, GP-GM [2]	---	---
	---	GW, GP, GW-GM, GP-GM [3]	Small stones.
	---	All other	Excess fines.
2. Layer thickness (inches)	---	<36	Thin layer.
	>36	---	---
3. Fraction greater than 3 inches (percent by weight) [4]	---	>50	Large stones.
	<50	---	---

[1] Evaluate the thickest layer between 10 and 60 inches and also the bottom layer. Choose the best rating. When rating is based on bottom layer, verify thickness.

[2] Percent passing No. 4 sieve minus percent passing No. 200 sieve is greater than 25.

[3] Percent passing No. 4 sieve minus percent passing No. 200 sieve is less than 25.

[4] Thickest layer between 10 and 60 inches.

Gravel

Property	Limits		Restrictive feature
	Probable source	Improbable source	
1. Unified [1]	GW, GP, GW-GM, GP-GM	---	---
	SW, SP, SW-SM, SP-SM [2]	SW, SP, SW-SM, SP-SM [3]	Too sandy.
	---	All other	Excess fines.
2. Layer thickness	---	<36	Thin layer.
	>36	---	---
3. Fraction greater than 3 inches (percent by weight) [4]	---	>50	Large stones.
	<50	---	---

[1] Evaluate the thickest layer between 10 and 60 inches and also the bottom layer. Choose the best rating. When rating is based on bottom layer, verify thickness.

[2] 100 minus percent passing No. 4 sieve is greater than 25.

[3] 100 minus percent passing No. 4 sieve is less than 25.

[4] Thickest layer between 10 and 60 inches.

Topsoil

Property	Limits			Restrictive feature
	Good	Fair	Poor	
1. USDA texture	---	---	Ice	Permafrost.
2. Depth to bedrock (inches)	>40	20-40	<20	Depth to rock.
3. Depth to cemented pan (inches)	>40	20-40	<20	Cemented pan.
4. Depth to bulk density greater than 1.8 g/cc (inches)	>40	20-40	<20	Area reclaim.
5. USDA texture [1]	---	LCOS, LS, LFS, LVFS	COS, S, FS, VFS	Too sandy.
6. USDA texture [1]	---	SCL, CL, SICL [2]	SIC, C, SC	Too clayey.
7. USDA texture [1]	---	---	FB, HM, SP, MPT, muck, peat, CE	Excess humus.
8. Fraction greater than 3 inches (percent by weight): [3]				
0 to 40 inches	<5	5-25	>25	Large stones.
40 to 60 inches	<15	15-30	>30	Area reclaim.
9. Coarse fragments (percent): [3]				
0 to 40 inches	<5	5-25	>25	Small stones.
40 to 60 inches	<25	25-50	>50	Area reclaim.
10. Salinity (mmhos/cm) [1]	<4	4-8	>8	Excess salt.
11. Layer thickness (inches)	>40	20-40	<20	Thin layer.
12. Depth to high water table (feet)	---	---	<1	Wetness.
13. Sodium adsorption ratio in the upper 40 inches (great group or phase)	---	---	>12 (halic, natric, alkali phases)	Excess sodium.
14. Soil reaction (pH) [1]	---	---	<3.6	Too acid.
15. Slope (percent)	<8	8-15	>15	Slope.
16. Carbonates	---	---	([4])	Excess lime.

[1] Thickest layer between 0 and 40 inches.

[2] If soil contains more than 3 percent organic matter and has less than 35 percent clay, rate *good*.

[3] Sum (100 minus percent passing No. 10 sieve) and fraction greater than 3 inches. Use dominant condition for restrictive feature.

[4] If the amount of carbonate is so high that it restricts the growth of plants, rate "Poor—excess lime."

Pond Reservoir Areas

Property	Limits			Restrictive feature
	Slight	Moderate	Severe	
1. USDA texture	---	---	Ice	Permafrost.
2. Permeability between 20 and 60 inches (inches/hour)	<0.6	0.6-2.0	>2.0	Seepage.
3. Depth to bedrock (inches)	>60	20-60	<20	Depth to rock.
4. Depth to cemented pan (inches)	>60	20-60	<20	Cemented pan.
5. Slope (percent)	<3	3-8	>8	Slope.
6. USDA texture (all depths)	---	---	Marl, gyp	Seepage.
7. Downslope movement	---	---	(1)	Slippage.
8. Formation of pits	---	---	(2)	Pitting.

1 If the soil is susceptible to movement downslope when loaded, excavated, or wet, rate "Severe—slippage."

2 If the soil is susceptible to the formation of pits caused by the melting of ground ice when the surface cover is removed, rate "Severe—pitting."

Embankments, Dikes, and Levees

Property	Limits			Restrictive feature
	Slight	Moderate	Severe	
1. USDA texture	---	---	Ice	Permafrost.
2. Layer thickness (inches)	>60	30-60	<30	Thin layer.
3. Unified [1]	---	---	GW, GP, SW, SP, GW-GM, GP-GM, SW-SM, SP-SM, SM, [2] GM	Seepage.
4. Unified [1]	---	GM, [3] CL [4]	ML, [5] SM, [6] SP, CL-ML	Piping.
5. Unified [1]	---	---	PT, OL, OH	Excess humus.
6. Unified [1]	---	---	MH, CH [7]	Hard to pack.
7. Fraction greater than 3 inches (percent by weight) [8]	<15	15-35	>35	Large stones.
8. Depth to high water table (feet)	---	---	+	Ponding.
Apparent	>4	2-4	<2	Wetness.
Perched	>3	1-3	<1	Wetness.
9. Sodium adsorption ratio (great group)	---	---	>12 (natric, halic)	Excess sodium.
10. Salinity (mmhos/cm)	<8	8-16	>16	Excess salt.

[1] Thickest layer between 10 and 60 inches.

[2] Rate *moderate* if more than 20 percent passing No. 200 sieve and *slight* if more than 30 percent passing No. 200 sieve.

[3] Rate *slight* if less than 35 percent passing No. 200 sieve, less than 50 percent passing No. 40 sieve, and less than 65 percent passing No. 10 sieve. The soil must meet all three criteria before it is rated *slight*.

[4] Rate *slight* if PI is greater than 15.

[5] Rate *moderate* of PI is greater than 10.

[6] Rate *moderate* if less than 70 percent passing No. 40 sieve and less than 90 percent passing No. 10 sieve, and rate *slight* if less than 60 percent passing No. 40 sieve and less than 75 percent passing No. 10 sieve.

[7] Rate *moderate* if PI is less than 40.

[8] Weighted average to 40 inches.

Property	Limits			Restrictive feature
	Good	Fair	Poor	
1. Moisture regime	Aquic, xeric, ustic, and xeric and ustic bordering on aridic or torric.	Aridic and torric bordering on aquic, xeric or ustic.	Aridic and torric.	Too arid.
2. Effective moisture [1]	>10 in. (25 cm)	7-10 in. (17.5-25 cm)	<7 in. (17.5 cm)	Too arid.
3. Available water capacity	Surface 10 in. (27 cm) >1.25 in. (3.2 cm). Soil profile > 4 in. (10.2 cm).	Surface 10 in. (25 cm) 0.75-1.25 in. (1.9-3.2 cm). Soil profile 2.5-4 in. (6.4-10.2 cm).	Surface 10 in. (25 cm) <0.75 in. (1.9 cm). Soil profile < 2-5 in. (6.4 cm).	Droughty.
4. Texture surface 7 in. (17.5 cm)	LVFS, COSL, SL, FSL, VFSL, L SIL, SCL, and CL SICL with <35% C.	VFS, LFS, SC, SIC, C and CL and SICL with >35% C.	LS, LCOS, FS, COS.	Too sandy. Too clayey.
5. Rock fragments in surface 7 in. (17.5 cm)	GR <35%; CB <15%; ST <3%. Total rock fragments <35%.	GR <35%; CB 15-35%; ST 3-15%. Total rock fragments <35%.	GR >35%; CB 35%; ST >15%. Total rock fragments >35%.	Small stones. Large stones.
6. Depth to abrupt A-B texture boundary [2]	>10 in. (25 cm)	>10 in. (25 cm)	<10 in. (25 cm)	Rooting depth.
7. Depth to bedrock or hardpan	>20 in. (50 cm)	10-20 in. (25-50 cm)	<10 in. (25 cm)	Depth to rock/pan.
8. Electrical conductivity-saturation extract-25°C	<2 mmhos/cm (0.2 s/m) in upper 20 in. (50 cm).	2-4 mmhos/cm (0.2-0.4 s/m) in upper 10 in. (25 cm) and 4-8 mmhos/cm (0.4-0.8 s/m) in 10-20 in. (25-50 cm).	>4 mmhos/cm (0.4 s/m) in upper 10 in. (25 cm) and/or >8 mmhos/cm (0.8 s/m) in 10-20 in. (25-50 cm).	Excess salt.
9. Sodium adsorption ratio	<8 in upper 20 in. (50 cm).	8-13 in upper 10 in. (25 cm) and <20 in 10-20 in. (25-50 cm).	>13 in upper 10 in. (25 cm) and/or >20 in 10-20 in. (25-50 cm).	Excess sodium.
10. K x % slope [3]	<4 [4]; <6 [5]	4-6 [4]; 6-8 [5]	>6 [4]; >8 [5]	Erodes easily.
11. I x C [6]	<60	<60	>60	Soil blowing.
12. Soil surface morphological types [7]	Types I and II >60%; Type IV <5%; or with mollic epipedon [8]	Types I and II 20-60%; Type IV <10% [8]	Type III <60%; Type IV >10% [8]	Too crusty.

[1] Moisture from precipitation, run-on, and ground water budgeted to actual evapotranspiration.

[2] Rate Vertisols and Vertic subgroups as poor.

[3] Sheet and rill erosion hazard (bare soil).

[4] For ustic bordering on aridic or torric, and aridic or torric bordering on ustic moisture regimes.

[5] For xeric, xeric bordering on aridic or torric, and aridic or torric bordering on xeric moisture regimes.

[6] Wind erosion hazard (bare soil).

[7] See: (a) Final Report. Properties, Occurrence and Management of Soils with Vesicular Surface Horizons, 1977. Contract No. 52500-CT 5(N). USDI-BLM and UNR-Ag. Exp. Sta. Eckert, Peterson, Wood, and Blackburn; and (b) Final Report. Properties, Occurrence and Management of Soils with Vesicular Surface Horizons—Effects of Trampling on Seedling Emergence. 1979. Contract No. YA 512-CT 7-14. USDI-BLM and UNR-Ag. Exp. Sta. Stephens, Eckert, and Peterson.

[8] Soils without crusting morphology are to be included in Types I and II for rating.

Guide for Estimating the Hazard of Erosion on Bare Soil in Nevada

("K" means erosion factor K; "S" means percent slope; "I" means wind erodibility index; "C" means climatic factor)

	Water (K x S)	Wind (I x C)
Slight	<4	<60
Moderate	4-8	60-100
High	>8	>100

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-78)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
AUSTIN:											
January----	41.0	19.0	30.0	61	-8	10	1.02	0.45	1.50	4	12.1
February---	43.9	21.8	32.9	63	0	40	1.17	.47	1.75	5	12.6
March------	47.8	23.8	35.8	69	3	67	1.33	.41	2.06	4	13.6
April------	54.8	29.0	41.9	77	12	161	1.68	.42	2.67	5	17.5
May--------	65.6	37.5	51.6	87	19	379	1.36	.38	2.15	4	6.0
June-------	76.5	45.6	61.0	95	29	630	1.35	.36	2.15	3	.5
July-------	87.3	53.9	70.6	98	40	949	.62	.12	1.00	2	.0
August-----	84.9	52.2	68.6	96	36	887	.68	.06	1.14	2	.0
September--	76.2	44.7	60.5	92	25	615	.70	.05	1.19	2	.2
October----	64.8	36.0	50.4	84	15	348	.87	.08	1.43	2	3.6
November---	50.3	26.7	38.6	70	5	76	.94	.39	1.40	3	5.9
December---	41.7	20.4	31.1	59	-4	24	1.18	.28	1.89	5	12.6
Yearly:											
Average---	61.2	34.2	47.8	---	---	---	---	---	---	---	---
Extreme---	---	---	---	98	-9	---	---	---	---	---	---
Total-----	---	---	---	---	---	4,186	12.90	10.31	16.53	41	84.6
BATTLE MOUNTAIN:											
January----	41.3	16.2	28.7	62	-16	36	.58	.23	.88	3	4.9
February---	47.6	21.7	34.7	68	-2	54	.56	.17	.88	2	4.2
March------	53.4	24.3	38.9	76	3	86	.61	.15	.98	3	3.6
April------	61.8	29.4	45.6	83	12	198	.79	.21	1.25	3	3.1
May--------	72.3	38.0	55.2	94	19	477	.77	.12	1.27	3	.4
June-------	82.1	45.6	63.8	99	29	714	1.04	.22	1.68	3	.0
July-------	93.0	51.7	72.4	104	39	1,004	.26	.04	.43	1	.0
August-----	90.4	48.2	69.3	103	31	908	.34	---	.62	1	.0
September--	81.0	39.1	60.1	97	21	603	.47	---	.80	1	.0
October----	68.5	29.7	49.2	87	12	295	.57	---	.99	2	.2
November---	52.2	22.0	37.2	73	0	62	.57	.20	.87	2	1.9
December---	41.8	15.9	28.9	61	-14	22	.77	.26	1.19	3	6.5
Yearly:											
Average---	65.5	31.8	48.7	---	---	---	---	---	---	---	---
Extreme---	---	---	---	104	-19	---	---	---	---	---	---
Total-----	---	---	---	---	---	4,459	7.33	5.34	9.17	27	24.8

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-78)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
AUSTIN:			
Last freezing temperature in spring:			
1 year in 10 later than--	May 21	June 8	June 19
2 years in 10 later than--	May 14	June 2	June 13
5 years in 10 later than--	May 3	May 21	June 3
First freezing temperature in fall:			
1 year in 10 earlier than--	Sept. 27	Sept. 17	Sept. 5
2 years in 10 earlier than--	Oct. 4	Sept. 23	Sept. 11
5 years in 10 earlier than--	Oct. 18	Oct. 4	Sept. 23
BATTLE MOUNTAIN:			
Last freezing temperature in spring:			
1 year in 10 later than--	May 18	June 4	June 21
2 years in 10 later than--	May 13	May 28	June 14
5 years in 10 later than--	May 3	May 15	May 31
First freezing temperature in fall:			
1 year in 10 earlier than--	Sept. 16	Sept. 3	Aug. 26
2 years in 10 earlier than--	Sept. 21	Sept. 9	Aug. 31
5 years in 10 earlier than--	Oct. 1	Sept. 20	Sept. 11

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-78)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
AUSTIN:			
9 years in 10	138	112	88
8 years in 10	148	120	96
5 years in 10	168	136	111
2 years in 10	188	151	127
1 year in 10	198	159	135
BATTLE MOUNTAIN:			
9 years in 10	129	99	73
8 years in 10	137	109	83
5 years in 10	151	127	103
2 years in 10	165	146	122
1 year in 10	173	155	133

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
102	Beowawe Variant-Tomera-Whirlo association	3,265	0.2
112	Millerlux-Reluctan-Cleavage association	2,305	0.1
120	Alyan-Graley-Rock outcrop association	840	0.1
130	Alley-Dewar association	1,255	0.1
131	Alley-Rock outcrop-Rubble land association	5,965	0.4
140	Antel silt loam	2,165	0.1
141	Antel silt loam, moderately sodic	395	*
142	Antel silty clay loam	360	*
143	Antel silty clay loam, occasionally flooded	2,890	0.2
150	Argenta very fine sandy loam	3,885	0.2
152	Argenta-Sonoma complex	1,220	0.1
160	Batan fine sandy loam	1,185	0.1
161	Batan silt loam	15,700	1.1
162	Batan silt loam, occasionally flooded	2,750	0.2
163	Batan silt loam, slightly saline	1,635	0.1
164	Batan-Raglan-Rosney association	4,920	0.3
166	Batan-Wendane-Sonoma association	6,460	0.4
167	Batan-Wendane-Valmy association	1,675	0.1
168	Batan-Bubus-Ocala association	5,100	0.3
169	Batan-Ocala-Ocala, rarely flooded, association	2,150	0.1
170	Beoska silt loam, 0 to 2 percent slopes	810	0.1
171	Beoska silt loam, 2 to 8 percent slopes	22,000	1.5
172	Beoska-Tenabo silt loams, nearly level	6,880	0.4
173	Beoska-Tenabo silt loams, sloping	11,000	0.7
174	Beoska-Chiara association	4,855	0.3
175	Beoska-Jenor association	4,840	0.3
177	Beoska-Oxcorel-McConnel association	5,405	0.3
178	Beoska-Malpais-Old Camp association	3,525	0.2
181	Beoska-Orovada association	5,380	0.3
182	Beoska-Whirlo-Misad association	2,770	0.2
183	Beoska-Dewar-Orovada association	2,195	0.1
185	Beowawe silt loam	385	*
192	Vanwyper-Trunk-Trunk, steep, association	13,760	0.9
193	Berning-Alley association	2,365	0.1
200	Sonoma Variant silt loam	120	*
202	Bioya-Chiara-Cortez association	29,850	2.0
203	Bioya-Shabliss-Puett association	4,490	0.3
211	Blacka very fine sandy loam, 0 to 2 percent slopes	1,335	0.1
212	Blacka-Broyles very fine sandy loams, 2 to 8 percent slopes	4,150	0.3
213	Blacka-Broyles very fine sandy loams, saline, 2 to 4 percent slopes	310	*
220	Blackhawk very fine sandy loam, 2 to 8 percent slopes	1,290	0.1
230	Broyles very fine sandy loam, 0 to 2 percent slopes	12,410	0.8
231	Broyles very fine sandy loam, 2 to 4 percent slopes	10,000	0.7
232	Broyles very fine sandy loam, cemented substratum, 0 to 2 percent slopes	435	*
233	Broyles very fine sandy loam, moderately saline, 0 to 2 percent slopes	10,460	0.7
235	Broyles-Creemon association	6,585	0.4
237	Broyles-Beoska-Orovada association	6,800	0.4
240	Bubus very fine sandy loam	9,655	0.6
242	Bubus very fine sandy loam, gravelly substratum	5,045	0.3
243	Bubus-Playas complex	2,530	0.2
244	Bubus-Relley complex	1,875	0.1
245	Bubus-Needle Peak-Yipor association	940	0.1
247	Bubus-Isolde association	5,360	0.3
248	Bubus-Batan-Reese association	4,630	0.3
251	Bucan-Bucan, steep, association	1,965	0.1
252	Bucan-Humdun-Rock outcrop association	2,050	0.1
262	Chen-Slaven-Chen, cobbly, association	9,125	0.6
272	Cherry Spring-Enko association	21,240	1.4
282	Chiara-Orovada association	4,925	0.3
283	Chiara-Tenabo association	4,165	0.3
284	Chiara-Dewar association	6,245	0.4
285	Chiara-Trunk-Midraw association	2,725	0.2
286	Chiara-Jenor association	2,630	0.2

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
290	Creemon silt loam, 0 to 2 percent slopes	20,005	1.4
291	Creemon silt loam, 2 to 4 percent slopes	3,665	0.2
292	Creemon silt loam, 0 to 2 percent slopes, occasionally flooded	2,260	0.1
293	Creemon silt loam, strongly saline, 0 to 2 percent slopes	4,075	0.3
294	Creemon-Orovada-Broyles association	2,140	0.1
295	Creemon-Cren association	2,955	0.2
296	Creemon-Hessing association	3,515	0.2
297	Creemon-Orovada-Tulase association	3,015	0.2
298	Creemon-Misad association	1,580	0.1
300	Cren silt loam	4,415	0.3
303	Cren-Doowak-Relley association	3,165	0.2
304	Cren-Raglan-Batan association	4,420	0.3
310	Davey fine sandy loam	740	*
312	Davey fine sandy loam, cemented substratum	2,550	0.2
313	Davey-Goldrun complex	2,835	0.2
340	Duffer very fine sandy loam	1,685	0.1
370	Enko fine sandy loam, 2 to 8 percent slopes	8,000	0.5
371	Enko-Shabliss-Orovada association	5,765	0.4
400	Glean-Walti-Cleavage association	8,855	0.6
411	Golconda-Blackhawk association	2,895	0.2
412	Golconda-Dun Glen association	5,060	0.3
413	Golconda-Blownout land complex	3,165	0.2
420	Goldrun fine sand, 0 to 4 percent slopes	180	*
422	Goldrun-Old Camp association	1,735	0.1
441	Gund-Umberland association	595	*
442	Gund-Bubus-Wendane association	3,390	0.2
443	Gund-Batan association	1,315	0.1
461	Hapgood-Packer-Layview association	5,330	0.3
466	Hapgood-Tusel-Winada association	7,545	0.5
467	Hapgood-Sumine-Cleavage association	6,390	0.4
482	Humdun-Havingdon-Bucan association	10,625	0.7
486	Havingdon-Burrita association	1,930	0.1
511	Hessing silt loam	4,185	0.3
512	Hessing-Relley association	2,884	0.2
530	Humboldt fine sandy loam	225	*
531	Humboldt silty clay	755	*
532	Humboldt silty clay loam, slightly saline	220	*
571	Jenor-Blacka very fine sandy loams	1,410	0.1
573	Jenor-Beoska-Broyles association	4,550	0.3
590	Landco silt loam	6,585	0.4
602	Misad gravelly sandy loam, strongly saline-sodic	240	*
605	Misad-Creemon-Rednik association	2,790	0.2
631	McConnel-Tulase association	4,220	0.3
660	Needle Peak silt loam, occasionally flooded	300	*
670	Filiran-Pineval-Kingingham association	1,830	0.1
680	Skullwak-Umberland-Wendane association	6,005	0.4
684	Ocala silt loam, occasionally flooded	2,620	0.2
700	Orovada fine sandy loam, 0 to 2 percent slopes	2,535	0.2
701	Orovada fine sandy loam, 2 to 4 percent slopes	7,490	0.5
702	Orovada fine sandy loam, cemented substratum, 0 to 2 percent slopes	1,785	0.1
703	Orovada-Goldrun complex	580	*
704	Orovada-Kodra-Puett association	4,525	0.3
705	Orovada-Creemon complex	1,745	0.1
706	Orovada-Wieland-Chiara association	7,575	0.5
707	Orovada-Goldrun association	11,000	0.7
708	Orovada-Reina-Rock outcrop association	1,800	0.1
709	Orovada-Sodhouse association	750	*
711	Paranat silty clay loam	600	*
713	Paranat silty clay loam, drained	440	*
714	Paranat silty clay loam, occasionally flooded	490	*
731	Yipor silt loam, moderately saline-sodic	1,570	0.1
740	Playas	20,020	1.4
770	Prida silt loam	1,060	0.1

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
774	Prida-Sonoma silty clay loams	955	0.1
780	Pumper silt loam	3,150	0.2
800	Raglan silt loam, gravelly substratum	2,155	0.1
804	Raglan silty clay loam, moderately saline	460	*
805	Raglan silt loam	570	*
814	Quarz-Linrose-Slaven association	4,655	0.3
816	Quarz-Linrose-Cleavage association	2,080	0.1
830	Reese silt loam	4,715	0.3
835	Reese-Ocala association	9,035	0.6
841	Wendane Variant silt loam	180	*
850	Relley silt loam	19,090	1.2
851	Relley silt loam, cemented substratum	1,360	0.1
852	Relley silt loam, strongly saline	2,355	0.1
853	Relley silty clay loam	820	0.1
855	Relley-Broyles association	6,005	0.4
861	Rixie silty clay loam, strongly saline	405	*
862	Rixie silty clay loam, drained, strongly saline	3,760	0.2
863	Rixie-Rixie, sodic, complex	265	*
864	Rixie silty clay loam	590	*
870	Roca-Bregar-Linrose association	1,645	0.1
872	Roca-Linrose-Wiskan association	3,640	0.2
873	Roca-Reluctan association	4,250	0.3
875	Roca-Glean-Bregar association	7,220	0.5
881	Rose Creek silt loam, drained, strongly saline	510	*
882	Rose Creek silty clay loam	1,140	0.1
883	Rose Creek-Paranat silty clay loams	605	*
891	Rosney loam, cemented substratum	680	*
892	Rosney silt loam	4,980	0.3
970	Soolake very fine sandy loam, 0 to 2 percent slopes	1,315	0.1
971	Soolake very fine sandy loam, 2 to 8 percent slopes	560	*
972	Soolake-Dunphy-Argenta association	8,450	0.5
980	Sombrero very fine sandy loam	1,625	0.1
990	Sonoma silt loam, drained	335	*
991	Sonoma silt loam, drained, slightly saline	280	*
992	Sonoma silt loam, strongly saline, rarely flooded	955	0.1
993	Sonoma silty clay loam, frequently flooded	6,955	0.4
994	Sonoma silty clay loam, drained, strongly saline, occasionally flooded	1,325	0.1
995	Sonoma silty clay loam, strongly saline, occasionally flooded	1,875	0.1
996	Sonoma, strongly saline-Sonoma complex	305	*
997	Sonoma silty clay loam, strongly saline, frequently flooded	305	*
1021	Susie Creek-Millerlux association	4,510	0.3
1031	Teman silt loam	5,345	0.3
1032	Teman silt loam, clayey substratum	685	*
1033	Teman silt loam, strongly saline	620	*
1040	Tenabo, gravelly-Allor-Tenabo association	3,380	0.2
1041	Tenabo-Ricert association	9,630	0.6
1042	Tenabo very gravelly loam, 2 to 8 percent slopes	2,050	0.1
1062	Tomera-Snapp-Whirlo association	5,190	0.3
1080	Trunk-Burrita association	405	*
1082	Trunk-Reina association	5,485	0.3
1084	Trunk-Burrita-Rock outcrop association	2,645	0.2
1085	Trunk-Dewar-Stingdorn association	1,985	0.1
1086	Trunk-Malpais-Minat association	4,055	0.3
1087	Trunk-Burrita-Colbar association	4,290	0.3
1091	Tulase silt loam, 2 to 8 percent slopes	235	*
1092	Tulase-Bubus-McConnel association	1,785	0.1
1102	Tweba very fine sandy loam, drained, 0 to 4 percent slopes	4,175	0.3
1110	Umberland silty clay loam, ponded	630	*
1140	Wendane silt loam, frequently flooded	16,190	1.0
1141	Wendane silt loam, sandy substratum	265	*
1142	Wendane-Tweba association	2,445	0.2
1143	Wendane silt loam, occasionally flooded	4,665	0.3
1144	Wendane-Batan-Broyles association	6,000	0.4

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
1145	Wendane-Playas association	7,830	0.5
1146	Wendane-Sonoma-Valmy association	1,955	0.1
1150	Weso fine sandy loam	8,680	0.5
1158	Whirlo very fine sandy loam, 2 to 4 percent slopes, occasionally flooded	260	*
1160	Whirlo gravelly loam, 2 to 8 percent slopes	555	*
1162	Whirlo silt loam, 0 to 2 percent slopes	2,245	0.1
1163	Whirlo silt loam, 2 to 4 percent slopes	2,635	0.2
1165	Whirlo-Creemon association	4,105	0.3
1166	Whirlo-Pumper silt loams	475	*
1168	Whirlo-Oxcorel association	2,860	0.2
1169	Whirlo-Broyles association	15,345	1.0
1170	Wholan silt loam	6,005	0.4
1174	Wholan silt loam, sandy substratum	510	*
1177	Wholan, strongly alkaline-Rasille association	3,885	0.2
1178	Wholan-Rasille association	2,665	0.2
1201	Slaven-Linrose-Cleavage association	7,865	0.5
1202	Slaven-Wiskan-Graley Variant association	6,940	0.4
1203	Slaven-Glean-Cleavage association	9,835	0.6
1212	Wiskan-Roca-Bregar association	3,000	0.2
1215	Wiskan-Locane association	4,170	0.3
1216	Wiskan-Linrose association	2,710	0.2
1220	Boulflat-Havingdon-Dewar association	4,470	0.3
1221	Boulflat-Colbar-Old Camp association	5,220	0.3
1240	Redflame-Kingingham association	4,170	0.3
1263	Graley-Loncan-Bregar association	4,720	0.3
1280	Ricert-Oxcorel-Whirlo association	2,920	0.2
1281	Ricert-Whirlo-Pineval association	9,455	0.6
1283	Ricert-Kingingham-Oxcorel association	4,870	0.3
1291	Kingingham-Tenabo-Sodhouse association	6,865	0.4
1292	Kingingham-Golconda-Whirlo association	12,540	0.8
1293	Kingingham-Oxcorel association	9,325	0.6
1294	Kingingham-Whirlo-Beoska association	4,630	0.3
1342	Doowak, cobbly-Doowak-Veta association	1,435	0.1
1392	Rock outcrop-Loncan Variant-Glean association	2,060	0.1
1400	Koynik, steep-Koynik-Rock outcrop association	3,875	0.2
1410	Bojo-Stingdorn association	7,165	0.5
1411	Bojo-Rock outcrop-Osoll association	3,000	0.2
1412	Bojo-Humdun-Boulflat association	920	0.1
1420	Sumine-Reluctan-Cleavage association	25,325	1.7
1421	Sumine-Softscrabble-Walti association	2,655	0.2
1422	Sumine-Hapgood-Cleavage association	8,305	0.5
1423	Sumine-Chen-Rock outcrop association	19,655	1.2
1425	Sumine-Loncan association	2,020	0.1
1426	Sumine-Cleavage-Loncan association	6,225	0.4
1427	Sumine-Itca-Softscrabble association	2,435	0.2
1428	Sumine-Rubble land-Cleavage association	2,900	0.2
1429	Sumine-Winada Variant-Pernty association	6,560	0.4
1450	Atlow, steep-Atlow-Stingdorn association	4,670	0.3
1451	Atlow-Reluctan-Trunk association	2,225	0.1
1452	Atlow-Minat-Old Camp association	2,385	0.2
1453	Atlow-Colbar-Rock outcrop association	6,035	0.4
1532	Cleavage-Rubble land-Bregar association	3,830	0.2
1542	Linrose-Cleavage-Pernty association	3,870	0.2
1570	Koynik Variant-Oxcorel-Whirlo association	4,260	0.3
1600	Dumps and Pits, mine	4,575	0.3
1601	Pits, gravel	180	*
1662	Floer-Slaven-Roca association	2,670	0.2
1670	Wieland-Allor association	15,170	1.0
1671	Wieland-Oxcorel-Allor association	13,180	0.8
1673	Wieland-Grassval-Puett association	1,385	0.1
1680	Zineb gravelly loam, 2 to 8 percent slopes	2,590	0.2
1682	Zineb-Doowak-Oxcorel association	3,185	0.2
2060	Oxcorel-Beoska-Whirlo association	19,360	1.2

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
2061	Oxcorel-Whirlo-Dun Glen association	6,960	0.4
2062	Oxcorel-Orovada association	7,540	0.5
2064	Oxcorel-Misad association	5,165	0.3
2065	Oxcorel-Oxcorel, moderately steep-Pineval association	5,515	0.3
2066	Oxcorel-Broyles-Dun Glen association	6,160	0.4
2067	Oxcorel-Colbar-Stingdorn association	3,970	0.2
2068	Oxcorel-Golconda-Whirlo association	13,805	0.9
2069	Oxcorel-Rednik-Veta association	5,045	0.3
2090	Punchbowl-Robson-Reluctan association	2,420	0.2
2091	Punchbowl-Teguro-Sumine association	5,610	0.4
2092	Punchbowl-Belate-Reluctan association	2,320	0.1
2094	Punchbowl-Jung-Locane association	1,625	0.1
2098	Punchbowl-Clanalpine-Sumine association	6,760	0.4
2099	Punchbowl-Roca-Rock outcrop association	3,115	0.2
2100	Grassval-Grina-Unsel Variant association	3,845	0.2
2104	Grassval-Zineb-Izod association	1,455	0.1
2521	Stingdorn very cobbly loam, 4 to 30 percent slopes	3,915	0.2
2522	Stingdorn-Stingdorn, steep-Colbar association	2,705	0.2
2530	Perwick-Puett-Tulase association	270	*
2540	Buffaran-Wieland association	6,210	0.4
2541	Buffaran-Zoesta association	5,290	0.3
2550	Laped-Old Camp-Colbar association	3,125	0.2
2551	Laped-Colbar-Osoll association	2,447	0.2
2552	Laped-Old Camp-Puett association	9,065	0.6
2553	Laped-Stingdorn-Colbar association	10,260	0.6
2555	Laped-Colbar association	2,800	0.2
2561	Puett-Genaw-Orovada association	2,225	0.1
2571	Colbar, steep-Burrita-Colbar association	5,815	0.4
2573	Colbar-Midraw association	2,940	0.2
2575	Colbar-Perwick-Settlemeyer association	1,610	0.1
2591	Osoll Variant-Oxcorel association	1,640	0.1
2600	Grina-Caniwe-Handy association	4,960	0.3
2602	Grina-Grina, eroded-Caniwe association	3,440	0.2
2620	Handy-Caniwe-Zoesta association	1,055	0.1
2621	Handy, gravelly-Handy-Zoesta association	2,415	0.2
2631	Midraw-Minat-Pineval association	3,935	0.2
2640	Rasille-Kelk association	740	*
2652	Malpais-Stingdorn association	2,210	0.1
2670	Zoesta Variant-Jung-McVegas association	2,115	0.1
2681	Tessfive-Puett-Grina association	3,775	0.2
2711	Burrita-Burnborough association	825	0.1
2712	Burrita-Alley-Newpass association	5,800	0.4
2721	Burnborough-Sumine-Burrita association	6,145	0.4
2760	Ginex-Burrita-Burrita, south aspect, association	6,035	0.4
2771	Kram-Hopeka-Rock outcrop association	2,365	0.1
2783	Desatoya, steep-Spike-Desatoya association	410	*
2790	Old Camp-Minat-Osoll association	3,525	0.2
2791	Old Camp-Colbar-Rock outcrop association	5,360	0.3
2793	Old Camp-Laped association	5,335	0.3
2794	Old Camp-Kram Variant-Rock outcrop association	6,465	0.4
2796	Old Camp-Osoll-Colbar association	8,010	0.5
2797	Old Camp, steep-Colbar-Old Camp association	14,860	0.9
2798	Old Camp-Atlow-Osoll association	2,130	0.1
2800	Old Camp-Walti-Softscrabble association	7,574	0.5
2801	Old Camp-Rock outcrop-Colbar association, strongly sloping	6,780	0.4
2802	Old Camp-Rock outcrop-Colbar association, steep	4,665	0.3
3071	Allor-Wieland association	9,330	0.6
3111	Ninemile-Zoesta-Itca association	4,300	0.3
3121	Walti-Softscrabble-Bucan association	5,255	0.3
3122	Walti-Sumine-Softscrabble association	5,005	0.3
3127	Walti-Cleavage-Softscrabble association	7,550	0.5
3134	Itca-Clanalpine-Sumine association	5,425	0.3
3150	Robson-Wiskan association	3,630	0.2

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
3152	Robson-Reluctan association	10,285	0.7
3156	Robson-Old Camp-Rock outcrop association	2,410	0.2
3203	Dewar-Sodhouse-Bojo association	1,995	0.1
3410	Zoesta-Wieland-Akerue association	3,230	0.2
3413	Zoesta-Reluctan association	3,000	0.2
3415	Zoesta-Handy association	2,995	0.2
3417	Zoesta-Loncan-Welch association	1,360	0.1
3420	Belate-Sumine-Softscrabble association	2,310	0.1
3423	Belate-Cleavage-Softscrabble association	2,310	0.1
3432	Bregar-Roca-Quarz association	5,065	0.3
3433	Bregar-Punchbowl association	3,625	0.2
3451	Reluctan-Robson-Sumine association	9,735	0.6
3452	Reluctan-Sumine-Colbar association	3,585	0.2
3453	Reluctan-Locane-Itca association	615	*
3455	Reluctan-Roca-Colbar association	4,740	0.3
3560	Locane-Robson-Bregar association	3,025	0.2
3561	Locane-Sumine-Glean association	6,350	0.4
3564	Locane-Zoesta-Bucan association	3,585	0.2
3621	Minat-Bojo-Stingdorn association	1,515	0.1
3622	Minat-Minat, eroded, association	2,940	0.2
3624	Minat-Colbar-Atlow association	3,225	0.2
3650	McVegas-Old Camp-Kingingham association	2,550	0.2
3651	McVegas-Beoska association	2,115	0.1
3652	McVegas-Stingdorn-Colbar association	7,405	0.5
3661	Dun Glen-Whirlo association	2,745	0.2
3690	Izod-Koynik-Rock outcrop association	2,700	0.2
3691	Izod-Rock outcrop association	2,075	0.1
3693	Izod-Attella-Xine association	1,970	0.1
3740	Kelk silt loam, saline, 0 to 4 percent slopes	2,590	0.2
3741	Kelk-Settlemeyer association	1,500	0.1
3742	Kelk-Ocala association	4,515	0.3
3840	Jung-Norfork-Buffaran association	8,805	0.6
3841	Jung-Itca-Roca association	5,730	0.4
3843	Jung, steep-Robson-Jung association	8,450	0.5
3845	Jung-Stingdorn-Atlow association	4,455	0.3
3846	Jung-Wiskan association	4,635	0.3
3881	Layview-Packer-Hapgood association	1,035	0.1
3950	Hooplite-Jung-Izod association	565	*
3961	Pineval-Orovada-Beoska association	5,740	0.4
3990	Settlemeyer fine sandy loam, drained, 0 to 4 percent slopes	1,510	0.1
3992	Settlemeyer, drained-Settlemeyer loams	250	*
4051	Attella-Xine-Kram association	5,205	0.3
4070	Genaw-Wieland-Grina association	4,230	0.3
4071	Genaw-Perlor-Puett association	11,740	0.7
4072	Genaw-Orovada-Puett association	1,565	0.1
4091	Coztur-Genaw association	7,080	0.4
4093	Coztur-Teguro-Punchbowl association	4,395	0.3
4140	Welch loam, drained, 2 to 8 percent slopes	1,770	0.1
	Total	1,588,530	100.0

* Less than 0.1 percent.

TABLE 5.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
102*:											
Beowawe Variant-	0-7	Silt loam--------	ML	A-4	0-5	90-100	85-95	75-90	60-75	15-25	NP-5
	7-25	Gravelly clay loam.	GC, SC	A-6, A-7	0-5	65-80	55-70	45-60	35-50	35-45	15-20
	25-60	Extremely gravelly loamy sand.	GP-GM	A-1	0-10	30-45	15-25	10-20	5-10	---	NP
Tomera----------	0-8	Gravelly loam----	SM, GM, SM-SC, GM-GC	A-2, A-4	0	55-80	50-75	35-70	25-50	20-30	NP-10
	8-33	Gravelly clay, clay, gravelly sandy clay.	CH, SC	A-7	0	70-85	55-80	45-75	35-60	50-65	25-35
	33-60	Extremely gravelly sandy loam, very gravelly loamy sand, very cobbly loam.	GM	A-1	1-40	40-50	30-45	20-40	10-25	---	NP
Whirlo----------	0-7	Gravelly sandy loam.	SM	A-2, A-4	0-10	65-80	60-75	40-55	25-40	15-25	NP-5
	7-13	Gravelly sandy loam, gravelly loam, fine sandy loam.	SM, GM	A-2, A-4	0-10	60-95	55-85	40-60	25-50	15-25	NP-5
	13-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GM	A-1, A-2	5-30	45-60	25-50	20-40	10-30	15-25	NP-5
112*:											
Millerlux-------	0-10	Gravelly loam----	GM-GC, SM-SC	A-4	5-10	65-80	55-70	45-60	35-50	15-25	5-10
	10-15	Clay-------------	CH	A-7	0-10	90-100	85-100	80-95	60-75	50-65	25-40
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan--------	0-13	Gravelly loam----	SM-SC, CL-ML	A-4	5-10	70-80	60-75	50-65	40-55	25-30	5-10
	13-38	Gravelly clay loam, gravelly loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	38-42	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cleavage--------	0-4	Very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	0-10	50-70	30-50	25-45	20-40	25-35	5-15
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
120*:											
Alyan	0-10	Gravelly loam	GM-GC, CL-ML, GC, CL	A-2, A-4, A-6	0-5	55-80	50-75	35-60	25-55	25-35	5-15
	10-16	Clay	CL, CH	A-7	0-5	80-90	75-85	65-80	50-65	45-60	20-35
	16-24	Gravelly clay	GC, CL, CH	A-7	0-5	55-80	50-75	40-65	35-55	45-60	20-35
	24-28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Graley	0-7	Very gravelly loam.	GM	A-1, A-2	0-5	30-50	25-45	20-40	15-30	20-25	NP-5
	7-14	Very gravelly clay loam, very gravelly clay.	GC	A-2, A-7	0-25	40-55	35-50	30-50	25-40	45-55	20-30
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
130*:											
Alley	0-3	Cobbly fine sandy loam.	SM	A-4	25-30	85-95	80-90	55-65	35-50	25-30	NP-5
	3-16	Gravelly clay loam, gravelly sandy clay loam, gravelly loam.	SC, GC	A-6	0-10	65-80	55-75	50-65	35-50	30-35	15-20
	16-40	Gravelly fine sandy loam, cobbly fine sandy loam, gravelly sandy loam.	SM, GM	A-2, A-4	0-40	60-85	50-80	35-75	25-40	25-30	NP-5
	40-60	Very cobbly fine sandy loam.	SM	A-2	30-45	70-75	60-70	45-55	25-35	25-30	NP-5
Dewar	0-4	Very cobbly very fine sandy loam.	SM-SC, CL-ML	A-4	40-50	70-95	65-80	55-75	40-55	25-30	5-10
	4-14	Cobbly silty clay loam.	CL	A-6, A-7	25-30	85-95	80-90	75-90	65-85	35-45	15-20
	14-60	Indurated	---	---	---	---	---	---	---	---	---
131*:											
Alley	0-3	Very cobbly very fine sandy loam.	GM-GC, GM, SM-SC, SM	A-2	30-40	55-75	50-70	45-65	25-35	20-30	NP-10
	3-16	Gravelly clay loam, gravelly sandy clay loam, gravelly loam.	SC, GC	A-6	0-10	65-80	55-75	50-65	35-50	30-35	15-20
	16-40	Gravelly fine sandy loam, cobbly fine sandy loam, gravelly sandy loam.	SM, GM	A-2, A-4	0-40	60-85	50-80	35-75	25-40	25-30	NP-5
	40-60	Very cobbly fine sandy loam.	SM	A-2	30-45	70-75	60-70	45-55	25-35	25-30	NP-5
Rock outcrop.											
Rubble land.											

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
140, 141--------- Antel	0-11	Silt loam--------	CL	A-6	0	100	100	95-100	85-95	30-35	10-15
	11-60	Stratified very fine sandy loam to silty clay.	CL	A-6, A-7	0	100	100	95-100	90-95	35-50	15-25
142---------- Antel	0-11	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	35-40	15-20
	11-60	Stratified very fine sandy loam to silty clay.	CL	A-6, A-7	0	100	100	95-100	90-95	35-50	15-25
143---------- Antel	0-11	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	35-40	15-20
	11-60	Stratified very fine sandy loam to silty clay.	CL	A-6, A-7	0	100	100	95-100	90-95	35-45	15-25
150---------- Argenta	0-7	Very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	15-25	NP-5
	7-45	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	90-100	80-95	50-65	---	NP
	45-60	Gravelly sandy loam.	SM	A-1, A-2	0	95-100	55-65	35-45	20-30	15-25	NP-5
152*:											
Argenta---------	0-7	Very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	15-25	NP-5
	7-45	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	90-100	80-95	50-65	---	NP
	45-60	Gravelly sandy loam.	SM	A-1, A-2	0	95-100	55-65	35-45	20-30	15-25	NP-5
Sonoma----------	0-8	Silty clay loam	ML, CL	A-6, A-7	0	100	100	100	95-100	35-50	10-25
	8-60	Stratified silt loam to silty clay loam.	ML, CL	A-6, A-7	0	100	100	100	95-100	35-50	10-25
160---------- Batan	0-5	Fine sandy loam	SM, ML	A-4	0	100	100	70-85	40-55	15-20	NP-5
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
161---------- Batan	0-5	Silt loam--------	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
162---------- Batan	0-5	Silt loam--------	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-40	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
	40-60	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
163---------- Batan	0-5	Silt loam--------	ML	A-4	0	100	100	95-100	85-95	30-35	NP-5
	5-68	Stratified silt loam to silty clay.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
164*:											
Batan	0-5	Silt loam	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Raglan	0-6	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	85-95	75-85	25-35	5-10
	6-14	Silt loam	CL-ML, CL	A-4, A-6	0	95-100	95-100	85-95	75-85	25-40	5-15
	14-60	Stratified fine sandy loam to silty clay loam.	CL, ML	A-4, A-6	0	95-100	95-100	85-95	70-80	30-40	5-15
Rosney	0-7	Silt loam	ML	A-4	0	100	100	95-100	85-90	20-25	NP-5
	7-25	Silt loam	CL-ML	A-4	0	100	100	95-100	80-95	20-30	5-10
	25-60	Stratified silt loam to silty clay.	CL	A-6, A-7	0	100	100	95-100	85-95	35-45	15-20
166*:											
Batan	0-5	Silt loam	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Wendane	0-13	Silty clay loam	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
	13-27	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	27-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
Sonoma	0-8	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	80-95	35-50	15-25
	8-60	Stratified silt loam to silty clay loam.	CL, ML	A-6, A-7	0	100	100	100	95-100	35-50	10-25
167*:											
Batan	0-5	Silt loam	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Wendane	0-8	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	75-90	25-35	5-10
	8-60	Silty clay loam, silt loam.	ML, CL-ML	A-4	0	100	100	95-100	80-95	25-35	5-10
Valmy	0-6	Very fine sandy loam.	SM	A-4	0	90-100	85-100	65-75	35-50	15-25	NP-5
	6-46	Fine sandy loam	SM, ML	A-4	0	90-100	85-100	70-80	40-55	15-25	NP-5
	46-60	Silty clay loam	ML	A-6, A-7	0	100	100	95-100	80-95	35-45	10-15
168*:											
Batan	0-5	Silt loam	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
168*:											
Bubus	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
Ocala	0-13	Silt loam	ML, CL	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
	13-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20
169*:											
Batan	0-5	Silt loam	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Ocala	0-13	Silty clay loam	CL, ML	A-7	0	100	100	95-100	85-95	40-50	15-20
	13-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20
Ocala, rarely flooded	0-6	Silty clay loam	CL, ML	A-7	0	100	100	95-100	85-95	40-50	15-20
	6-13	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	100	100	95-100	85-95	30-50	10-20
	13-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20
170, 171 Beoska	0-13	Silt loam	ML	A-4	0	85-95	75-85	70-80	55-70	30-35	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
172*, 173*:											
Beoska	0-13	Silt loam	ML	A-4	0	85-95	75-85	70-80	55-70	30-35	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
172*, 173*:											
Tenabo	0-13	Silt loam	ML	A-4	0	95-100	90-100	85-95	75-85	25-35	NP-10
	13-20	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-95	60-90	50-85	30-40	15-25
	20-39	Indurated	---	---	---	---	---	---	---	---	---
	39-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
174*:											
Beoska	0-13	Silt loam	ML	A-4	0	85-95	75-85	70-80	55-70	30-35	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
Chiara	0-5	Fine sandy loam	SM	A-4	0	95-100	90-100	65-75	40-50	---	NP
	5-16	Very fine sandy loam, loam, silt loam.	ML	A-4	0	95-100	90-100	80-95	70-80	25-35	NP-5
	16-20	Indurated	---	---	---	---	---	---	---	---	---
175*:											
Beoska	0-13	Silt loam	ML	A-4	0	85-95	75-85	70-80	55-70	30-35	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
Jenor	0-6	Very fine sandy loam.	ML, CL-ML	A-4	0	90-100	90-100	80-95	50-65	15-25	NP-10
	6-16	Fine sandy loam, loam.	SM, SM-SC	A-4	0-5	80-95	75-95	60-75	35-50	15-25	NP-10
	16-26	Fine sandy loam, sandy loam, gravelly loam.	SM, SM-SC, ML, CL-ML	A-4, A-2	0-5	75-95	60-90	50-75	30-60	15-25	NP-10
	26-60	Indurated	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
177*:											
Beoska	0-13	Gravelly very fine sandy loam.	SM	A-4	0-10	70-80	55-75	50-70	35-50	15-25	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	---	NP
Oxcorel	0-5	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	5-20	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	20-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
McConnel	0-2	Gravelly fine sandy loam.	GM	A-2, A-4	0	60-70	50-70	40-60	25-45	15-25	NP-5
	2-12	Loam, sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-80	45-60	15-25	NP-5
	12-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP
178*:											
Beoska	0-13	Very fine sandy loam.	ML	A-4	10-25	85-95	80-90	65-80	50-65	15-25	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	SM, GM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
178*:											
Malpais	0-3	Very gravelly loam.	GM	A-2	40-50	45-55	35-50	35-45	25-35	20-30	NP-5
	3-15	Very gravelly loam, very cobbly fine sandy loam, very stony sandy loam.	GM	A-1	40-50	30-40	25-35	20-30	10-20	20-30	NP-5
	15-60	Very stony loam, very cobbly fine sandy loam, extremely cobbly sandy loam.	GM	A-1, A-2	40-50	45-55	35-50	25-45	20-30	20-30	NP-5
Old Camp	0-2	Very cobbly very fine sandy loam.	GM, SM	A-2, A-4	25-55	60-70	55-65	50-60	30-40	15-25	NP-5
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
181*:											
Beoska	0-13	Gravelly sandy loam.	SM	A-1, A-2	0-10	70-80	55-75	35-60	20-35	15-25	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	---	NP
Orovada	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
182*:											
Beoska	0-13	Very fine sandy loam.	ML, SM	A-4	0	85-95	75-95	70-80	45-65	15-25	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
Whirlo	0-12	Silt loam	ML	A-4	0	80-95	75-90	70-85	55-70	20-25	NP-5
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
Misad	0-7	Gravelly sandy loam.	SM, SM-SC	A-1, A-2	0-5	65-80	55-70	45-60	20-35	15-25	NP-10
	7-31	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	31-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP
183*:											
Beoska	0-13	Very fine sandy loam.	ML, SM	A-4	0	85-95	75-95	70-80	45-65	15-25	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
183*:											
Dewar	0-4	Gravelly loam	GC, CL, SC	A-6	0-5	60-90	55-80	45-80	35-70	25-35	10-15
	4-14	Gravelly silty clay loam, gravelly clay loam.	GC, CL	A-6, A-7	0-10	65-90	60-80	55-80	45-75	35-45	15-20
	14-50	Indurated	---	---	---	---	---	---	---	---	---
Orovada	0-8	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0	60-80	55-75	45-70	30-50	15-25	NP-5
	8-20	Fine sandy loam, loam, very fine sandy loam.	SM, ML	A-4	0	75-100	75-95	60-85	40-70	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
185	0-6	Silt loam	ML	A-4	0	100	95-100	85-95	65-85	20-30	NP-5
Beowawe	6-11	Loam, silt loam	CL-ML, ML	A-4	0	100	95-100	85-95	70-85	25-35	5-10
	11-60	Coarse sandy loam, loam.	SM, ML	A-2, A-4	0	100	85-95	55-80	30-60	15-25	NP-5
192*:											
Vanwyper	0-7	Cobbly loam	CL	A-6	15-25	85-90	80-90	60-85	55-75	25-35	10-15
	7-22	Very cobbly clay loam, very cobbly clay.	GC, CL, CH	A-7	35-55	55-75	50-65	45-60	40-55	40-60	20-40
	22-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Trunk	0-5	Cobbly clay loam	CL	A-6, A-7	15-30	75-95	70-90	65-85	55-70	35-45	15-20
	5-28	Gravelly clay, gravelly clay loam.	CL, CH, GC	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	28-32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Trunk, steep	0-5	Cobbly clay loam	CL	A-6, A-7	15-30	75-95	70-90	65-85	55-70	35-45	15-20
	5-28	Gravelly clay, gravelly clay loam.	CL, CH, GC	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	28-32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
193*:											
Berning	0-9	Extremely cobbly loam.	GM-GC, GC	A-2	60-70	45-60	30-50	25-40	15-30	25-35	5-15
	9-40	Very gravelly clay loam, very gravelly clay, very gravelly sandy clay.	GC	A-2	0-30	30-45	25-40	25-35	15-30	40-50	15-25
	40-60	Very gravelly sandy loam, extremely gravelly sandy clay loam.	GM-GC, GC	A-2	20-40	30-50	20-40	15-30	10-20	25-35	5-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
193*:											
Alley	0-7	Very gravelly loam.	GM, GM-GC	A-1, A-2, A-4	0-5	30-55	25-50	20-45	15-40	20-30	NP-10
	7-26	Gravelly clay loam, gravelly loam.	SC, GC	A-6	0-10	65-80	55-75	50-65	35-50	30-40	10-15
	26-37	Gravelly loam, gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-2	0-10	60-70	50-60	35-45	25-35	20-30	NP-10
	37-60	Very gravelly sandy loam.	GM	A-1	0-10	30-55	25-50	15-40	10-25	---	NP
200	0-4	Silt loam	ML	A-4	0	100	100	95-100	75-85	25-30	NP-5
Sonoma Variant	4-60	Silt loam	ML	A-4	0	100	100	95-100	75-85	25-30	NP-5
202*:											
Bioya	0-11	Very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	80-100	50-80	20-30	NP-10
	11-38	Silt loam, loam	CL, CL-ML	A-6, A-4	0	100	95-100	85-100	50-80	25-35	5-15
	38-60	Indurated	---	---	---	---	---	---	---	---	---
	60-65	Fine sandy loam	SM	A-4	0	95-100	90-100	75-85	35-50	20-25	NP-5
Chiara	0-5	Very fine sandy loam.	ML	A-4	0	95-100	90-100	85-95	70-80	25-35	NP-5
	5-16	Very fine sandy loam, loam, silt loam.	ML	A-4	0	95-100	90-100	80-95	70-80	25-35	NP-5
	16-20	Indurated	---	---	---	---	---	---	---	---	---
Cortez	0-12	Very fine sandy loam.	ML	A-4	0	95-100	85-95	80-90	50-70	---	NP
	12-26	Clay, gravelly clay, silty clay.	CH	A-7	0	80-95	60-85	55-80	55-75	50-60	35-45
	26-60	Indurated	---	---	---	---	---	---	---	---	---
203*:											
Bioya	0-8	Very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	80-100	50-80	20-30	NP-10
	8-35	Silt loam, loam	CL, CL-ML	A-6, A-4	0	100	95-100	85-100	50-80	25-35	5-15
	35-39	Indurated	---	---	---	---	---	---	---	---	---
Shabliss	0-6	Very fine sandy loam.	ML	A-4	0-5	95-100	95-100	85-95	60-75	---	NP
	6-16	Very fine sandy loam, loam, silt loam.	ML	A-4	0-5	95-100	95-100	80-95	60-75	---	NP
	16-34	Cemented	---	---	---	---	---	---	---	---	---
	34-60	Loamy sand, gravelly loamy sand.	SM	A-1	0-5	70-85	60-80	35-50	10-25	---	NP
Puett	0-4	Gravelly sandy loam.	GM, SM	A-2	5-10	55-80	50-75	40-60	25-35	15-20	NP-5
	4-15	Coarse sandy loam, gravelly sandy loam, loam.	SM, ML, GM	A-1, A-2, A-4	0	55-95	50-90	30-80	15-55	---	NP
	15	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
211---------- Blacka	0-8	Very fine sandy loam.	ML	A-4	0	100	100	85-95	50-65	---	NP
	8-21	Fine sandy loam, very fine sandy loam.	SM, ML	A-4	0	100	100	70-90	40-60	25-30	NP-5
	21-31	Cemented---------	---	---	---	---	---	---	---	---	---
	31-60	Stratified sandy loam to loam.	SM	A-4	0	100	100	65-85	35-50	20-25	NP-5
212*:											
Blacka----------	0-8	Very fine sandy loam.	ML	A-4	0	100	100	85-95	50-65	---	NP
	8-21	Fine sandy loam, very fine sandy loam.	SM, ML	A-4	0	100	100	70-90	40-60	25-30	NP-5
	21-31	Cemented---------	---	---	---	---	---	---	---	---	---
	31-60	Stratified sandy loam to loam.	SM	A-4	0	100	100	65-85	35-50	20-25	NP-5
Broyles----------	0-11	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
213*:											
Blacka----------	0-8	Very fine sandy loam.	ML	A-4	0	100	100	85-95	50-65	25-30	NP-5
	8-21	Fine sandy loam, very fine sandy loam.	SM, ML	A-4	0	100	100	70-90	40-60	25-30	NP-5
	21-31	Cemented---------	---	---	---	---	---	---	---	---	---
	31-60	Stratified sandy loam to loam.	SM	A-4	0	100	100	65-85	35-50	20-25	NP-5
Broyles----------	0-5	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-100	50-70	20-25	NP-5
	5-11	Silt loam, very fine sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	75-90	40-55	20-25	NP-5
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
220---------- Blackhawk	0-8	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	65-75	---	NP
	8-14	Silt loam, loam, very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	70-80	30-35	NP-5
	14-17	Cemented---------	---	---	---	---	---	---	---	---	---
	17-38	Stratified loam to gravelly loamy coarse sand.	SM	A-1, A-2	0	75-90	70-85	35-50	10-30	---	NP
	38-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, SP, GP, SP-SM	A-1	0	45-60	20-50	10-35	0-10	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
230, 231--------- Broyles	0-11	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
232-------------- Broyles	0-11	Very fine sandy loam.	ML	A-4	0	100	100	85-95	55-65	20-30	NP-5
	11-28	Sandy loam-------	SM	A-2, A-4	0	100	100	60-70	30-40	15-20	NP-5
	28-45	Stratified loamy sand to loamy fine sand.	SM	A-2	0	100	100	55-75	20-35	---	NP
	45-60	Cemented---------	---	---	---	---	---	---	---	---	---
233-------------- Broyles	0-5	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-100	50-70	20-25	NP-5
	5-11	Silt loam, very fine sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	75-90	40-55	20-25	NP-5
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
235*:											
Broyles--------- Creemon---------	0-11	Silt loam--------	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
	0-7	Silt loam--------	ML	A-4	0	100	100	95-100	85-90	---	NP
	7-18	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	18-60	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
237*:											
Broyles--------- Beoska----------	0-11	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
	0-13	Very fine sandy loam.	ML, SM	A-4	0	85-95	75-95	70-80	45-65	15-25	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
237*:											
Orovada	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
240 Bubus	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
242 Bubus	0-6	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
	6-40	Very fine sandy loam.	SM, ML	A-4	0	95-100	90-100	80-90	45-60	25-30	NP-5
	40-60	Stratified very gravelly sand to extremely gravelly loamy coarse sand.	GP-GM, SP-SM	A-1	0	45-60	20-40	10-20	5-10	---	NP
243*:											
Bubus	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
Playas.											
244*:											
Bubus	0-6	Gravelly loam	SM	A-4	0	75-85	65-75	55-65	40-50	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
Relley	0-8	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	75-90	25-35	5-10
	8-16	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	16-28	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	28-60	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
245*:											
Bubus	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
Needle Peak	0-9	Silt loam	CL, ML	A-6, A-7	0	100	100	95-100	80-90	30-45	10-15
	9-49	Silt loam, silty clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	80-95	30-50	10-20
	49-60	Sandy loam	SM	A-4	0	100	100	60-80	35-50	15-25	NP-5
Yipor	0-16	Very fine sandy loam.	ML	A-4	0	100	100	95-100	60-80	15-25	NP-5
	16-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
247*:											
Bubus	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
Isolde	0-7	Fine sand	SP, SP-SM	A-3	0	100	100	75-90	0-10	---	NP
	7-60	Fine sand, sand	SP, SP-SM	A-3	0	100	100	50-80	0-10	---	NP
248*:											
Bubus	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
Batan	0-5	Silt loam	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Reese	0-9	Silt loam	CL-ML	A-4	0	100	100	95-100	80-85	25-30	5-10
	9-60	Stratified silt loam to silty clay loam.	CL	A-6	0	100	90-100	75-90	70-85	25-35	10-15
251*:											
Bucan	0-5	Cobbly loam	CL	A-6	20-25	75-85	70-80	65-75	50-60	30-35	10-15
	5-23	Clay	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	23-42	Cobbly clay, gravelly clay loam, gravelly clay.	CL	A-7	10-30	75-90	70-85	60-70	50-60	40-50	25-35
	42-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bucan, steep	0-5	Very cobbly loam	GC, CL	A-6	25-50	55-70	50-65	45-60	35-55	30-35	10-15
	5-30	Clay	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	30-52	Cobbly clay, gravelly clay loam, gravelly clay.	CL	A-7	10-30	75-90	70-85	60-70	50-60	40-50	25-35
	52-56	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
252*:											
Bucan	0-5	Cobbly loam	CL	A-6	20-25	75-85	70-80	65-75	50-60	30-35	10-15
	5-15	Clay	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	15-42	Cobbly clay, gravelly clay loam, gravelly clay.	CL	A-7	10-30	75-90	70-85	60-70	50-60	40-50	25-35
	42-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
252*:											
Humdun	0-6	Silt loam	ML	A-4	0	100	100	90-100	70-90	30-40	NP-10
	6-24	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
	24-60	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
Rock outcrop.											
262*:											
Chen	0-10	Very gravelly loam.	GC	A-2	0-15	50-65	35-50	30-45	25-35	30-35	10-15
	10-16	Very gravelly clay, extremely gravelly clay, very cobbly clay.	GC	A-2, A-7	0-45	35-50	25-45	25-45	20-40	50-60	25-35
	16-20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Slaven	0-5	Loam	CL	A-6	5-10	85-95	75-90	65-80	55-70	25-35	10-15
	5-22	Extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam.	GC	A-2	0	25-35	15-25	15-20	10-20	40-50	15-25
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Chen, cobbly	0-8	Cobbly loam	SM-SC, SM	A-4	20-25	80-90	60-80	55-70	40-50	25-35	5-10
	8-17	Very gravelly clay, very cobbly clay, extremely gravelly clay.	GC	A-2	5-45	45-55	30-50	25-40	25-35	45-60	20-30
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
272*:											
Cherry Spring	0-7	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	70-80	20-25	NP-5
	7-29	Loam, silt loam, clay loam.	CL-ML, CL	A-4, A-6	0-5	90-100	80-95	75-90	65-75	25-40	5-20
	29-41	Cemented	---	---	---	---	---	---	---	---	---
	41-60	Stratified sandy loam to extremely gravelly sandy loam.	GM	A-1	0-5	40-55	35-50	30-40	15-25	---	NP
Enko	0-7	Very fine sandy loam.	CL-ML	A-4	0	95-100	85-100	75-100	50-70	20-30	5-10
	7-15	Loam, sandy loam, fine sandy loam.	SM-SC, CL-ML	A-4	0	95-100	85-100	60-90	35-70	20-30	5-10
	15-60	Sandy loam, fine sandy loam, loam.	SM-SC, CL-ML	A-2, A-4	0	85-100	75-100	60-90	30-65	20-25	5-10

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
282*:											
Chiara	0-5	Very fine sandy loam.	ML	A-4	0	95-100	90-100	85-95	70-80	25-35	NP-5
	5-16	Very fine sandy loam, loam, silt loam.	ML	A-4	0	95-100	90-100	80-95	70-80	25-35	NP-5
	16-20	Indurated	---	---	---	---	---	---	---	---	---
Orovada	0-8	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	60-75	25-35	NP-5
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
283*:											
Chiara	0-5	Very fine sandy loam.	ML	A-4	0	95-100	90-100	85-95	70-80	25-35	NP-5
	5-16	Very fine sandy loam, loam, silt loam.	ML	A-4	0	95-100	90-100	80-95	70-80	25-35	NP-5
	16-20	Indurated	---	---	---	---	---	---	---	---	---
Tenabo	0-6	Very fine sandy loam.	ML	A-4	0	95-100	90-100	85-95	75-85	25-35	NP-10
	6-18	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-95	60-90	50-85	30-40	15-25
	18-40	Indurated	---	---	---	---	---	---	---	---	---
	40-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
284*:											
Chiara	0-5	Gravelly loam	SM	A-4	0-5	70-80	55-70	50-65	35-50	15-25	NP-5
	5-16	Very fine sandy loam, silt loam, loam.	ML	A-4	0	95-100	95-100	95-100	75-85	15-25	NP-5
	16-20	Indurated	---	---	---	---	---	---	---	---	---
Dewar	0-4	Gravelly loam	GC, CL, SC	A-6	0-5	60-90	55-80	45-80	35-70	25-35	10-15
	4-14	Gravelly silty clay loam, gravelly clay loam.	GC, CL	A-6, A-7	0-10	65-90	60-80	55-80	45-75	35-45	15-20
	14-50	Indurated	---	---	---	---	---	---	---	---	---
285*:											
Chiara	0-5	Very gravelly loam.	GM	A-1, A-2	0-5	50-60	35-50	30-45	20-35	15-25	NP-5
	5-16	Very fine sandy loam, silt loam, loam.	ML	A-4	0	95-100	95-100	95-100	75-85	15-25	NP-5
	16-20	Indurated	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
285*:											
Trunk	0-5	Cobbly loam	CL-ML, ML	A-4	15-30	75-95	70-90	60-90	50-70	20-30	NP-10
	5-28	Gravelly clay, gravelly clay loam.	CL, CH, GC	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	28-32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Midraw	0-6	Very cobbly loam	CL, GC	A-6, A-2	30-40	50-75	40-70	35-60	30-55	25-35	10-15
	6-16	Gravelly clay, gravelly clay loam.	GC, CL	A-7	0-10	65-75	55-70	50-65	45-60	40-50	15-25
	16-31	Indurated	---	---	---	---	---	---	---	---	---
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
286*:											
Chiara	0-5	Fine sandy loam	SM	A-4	0	95-100	90-100	65-75	40-50	---	NP
	5-16	Very fine sandy loam, loam, silt loam.	ML	A-4	0	95-100	90-100	80-95	70-80	25-35	NP-5
	16-20	Indurated	---	---	---	---	---	---	---	---	---
Jenor	0-6	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	90-100	90-100	70-85	35-55	15-25	NP-10
	6-16	Fine sandy loam, loam.	SM, SM-SC	A-4	0-5	80-95	75-95	60-75	35-50	15-25	NP-10
	16-26	Fine sandy loam, sandy loam, gravelly loam.	SM, SM-SC, ML, CL-ML	A-4, A-2	0-5	75-95	60-90	50-75	30-60	15-25	NP-10
	26-60	Indurated	---	---	---	---	---	---	---	---	---
290, 291 Creemon	0-10	Silt loam	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-45	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	45-60	Stratified gravelly very fine sandy loam to fine sandy loam.	SM	A-4	0	80-90	70-85	60-70	35-50	---	NP
292 Creemon	0-10	Silt loam	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-28	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	28-60	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-95	25-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
293----------	0-10	Silt loam--------	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
Creemon	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-45	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	45-60	Stratified gravelly very fine sandy loam to fine sandy loam.	SM	A-4	0	80-90	70-85	60-70	35-50	---	NP
294*:											
Creemon---------	0-10	Very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	25-30	NP-5
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-28	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	28-60	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-95	25-30	NP-5
Orovada---------	0-8	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	60-75	25-35	NP-5
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Broyles---------	0-5	Very fine sandy loam.	SM, ML	A-4	0	90-100	90-100	85-95	45-60	---	NP
	5-14	Very fine sandy loam.	SM, ML	A-4	0	90-100	90-100	85-95	40-55	---	NP
	14-60	Gravelly fine sandy loam.	SM	A-1, A-2	0	70-85	55-70	45-60	15-30	---	NP
295*:											
Creemon---------	0-10	Silt loam--------	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-45	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	45-60	Stratified gravelly very fine sandy loam to fine sandy loam.	SM	A-4	0	80-90	70-85	60-70	35-50	---	NP
Cren----------	0-7	Silt loam--------	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	7-26	Silt loam--------	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	26-60	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
296*:											
Creemon	0-10	Silt loam	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-45	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	45-60	Stratified gravelly very fine sandy loam to fine sandy loam.	SM	A-4	0	80-90	70-85	60-70	35-50	---	NP
Hessing	0-4	Silt loam	CL-ML	A-4	0	100	100	95-100	85-95	25-30	5-10
	4-11	Silt loam, silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	10-20
	11-18	Very fine sandy loam, silt loam.	CL-ML	A-4	0	95-100	95-100	85-95	60-70	25-30	5-10
	18-30	Gravelly loam	GM	A-4	0	60-70	55-65	45-55	35-50	25-30	NP-5
	30-60	Stratified very gravelly loamy coarse sand to extremely gravelly sand.	GP-GM, GW-GM	A-1	0	35-45	20-35	10-20	5-10	---	NP
297*:											
Creemon	0-10	Silt loam	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-45	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	45-60	Stratified gravelly very fine sandy loam to fine sandy loam.	SM	A-4	0	80-90	70-85	60-70	35-50	---	NP
Orovada	0-8	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	60-75	25-35	NP-5
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Tulase	0-6	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	95-100	60-70	15-25	NP-10
	6-60	Very fine sandy loam, silt loam.	CL-ML, ML	A-4	0	100	100	95-100	70-85	15-25	NP-10

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
298*:											
Creemon	0-10	Silt loam	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-45	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	45-60	Stratified gravelly very fine sandy loam to fine sandy loam.	SM	A-4	0	80-90	70-85	60-70	35-50	---	NP
Misad	0-7	Gravelly sandy loam.	SM, SM-SC	A-1, A-2	0-5	65-80	55-70	45-60	20-35	15-25	NP-10
	7-31	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	31-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP
300	0-7	Silt loam	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
Cren	7-26	Silt loam	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	26-60	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
303*:											
Cren	0-7	Silt loam	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	7-26	Silt loam	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	26-60	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
Doowak	0-6	Very gravelly loamy sand.	GM, GP-GM	A-1	5-10	40-55	30-45	15-30	5-15	---	NP
	6-60	Stratified extremely gravelly sand to extremely gravelly loamy sand.	GP	A-1	5-10	30-45	10-25	5-20	0-5	---	NP
Relley	0-8	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	75-90	25-35	5-10
	8-16	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	16-28	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	28-60	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
304*:											
Cren	0-7	Silt loam	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	7-26	Silt loam	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	26-60	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
304*:											
Raglan	0-6	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	85-95	75-85	25-35	5-10
	6-14	Silt loam	CL-ML, CL	A-4, A-6	0	95-100	95-100	85-95	75-85	25-40	5-15
	14-64	Stratified very fine sandy loam to silty clay loam.	CL, ML	A-4, A-6	0	95-100	95-100	85-95	60-80	30-40	5-15
Batan	0-5	Silt loam	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
310	0-5	Fine sandy loam	SM	A-2	0	100	100	80-95	25-35	---	NP
Davey	5-20	Fine sandy loam, sandy loam.	SM	A-2, A-4	0	100	100	80-90	30-40	20-25	NP-5
	20-60	Fine sand, loamy fine sand.	SM	A-2	0	85-100	85-100	70-80	10-20	---	NP
312	0-20	Fine sandy loam	SM	A-2, A-4	0	100	100	80-90	30-40	20-25	NP-5
Davey	20-50	Loamy fine sand	SM	A-2	0	85-100	85-100	70-80	20-30	---	NP
	50-60	Cemented	---	---	---	---	---	---	---	---	---
313*:											
Davey	0-5	Fine sandy loam	SM	A-2	0	100	100	80-95	25-35	---	NP
	5-20	Fine sandy loam, sandy loam.	SM	A-2, A-4	0	100	100	80-90	30-40	20-25	NP-5
	20-60	Fine sand, loamy fine sand.	SM	A-2	0	85-100	85-100	70-80	10-20	---	NP
Goldrun	0-7	Fine sand	SM	A-2	0	100	100	75-90	15-35	---	NP
	7-67	Fine sand	SM	A-2	0	100	100	75-90	10-20	---	NP
340	0-4	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	95-100	70-80	20-30	NP-10
Duffer	4-29	Silt loam, silty clay loam.	CL	A-6, A-7	0	100	100	95-100	85-95	30-45	10-20
	29-60	Stratified very fine sandy loam to silty clay loam.	CL, CL-ML	A-6, A-4	0	100	100	95-100	75-95	25-35	5-15
370	0-7	Fine sandy loam	SM-SC	A-4	0	95-100	85-100	60-75	35-50	20-30	5-10
Enko	7-15	Loam, sandy loam, fine sandy loam.	SM-SC, CL-ML	A-4	0	95-100	85-100	60-90	35-70	20-30	5-10
	15-60	Sandy loam, fine sandy loam, loam.	SM-SC, CL-ML	A-2, A-4	0	85-100	75-100	60-90	30-65	20-25	5-10
371*:											
Enko	0-7	Fine sandy loam	SM-SC	A-4	0	95-100	85-100	60-75	35-50	20-30	5-10
	7-15	Loam, sandy loam, fine sandy loam.	SM-SC, CL-ML	A-4	0	95-100	85-100	60-90	35-70	20-30	5-10
	15-60	Sandy loam, fine sandy loam, loam.	SM-SC, CL-ML	A-2, A-4	0	85-100	75-100	60-90	30-65	20-25	5-10

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
371*:											
Shabliss	0-6	Very fine sandy loam.	ML	A-4	0-5	95-100	95-100	85-95	60-75	---	NP
	6-16	Very fine sandy loam, loam, silt loam.	ML	A-4	0-5	95-100	95-100	80-95	60-75	---	NP
	16-34	Cemented	---	---	---	---	---	---	---	---	---
	34-60	Loamy sand, gravelly loamy sand.	SM	A-1	0-5	70-85	60-80	35-50	10-25	---	NP
Orovada	0-8	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	60-75	25-35	NP-5
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
400*:											
Glean	0-6	Gravelly loam	SM, GM	A-2, A-4	0-10	55-80	50-75	40-60	25-40	20-30	NP-5
	6-49	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0-25	30-65	25-60	20-50	10-35	20-30	NP-5
	49-53	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Walti	0-4	Gravelly loam	SM-SC, GM-GC, CL-ML	A-4	5-10	65-80	55-75	40-60	35-55	20-30	5-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cleavage	0-4	Extremely gravelly loam.	GM-GC	A-2	0-10	35-45	15-25	10-25	10-20	25-30	5-10
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
411*:											
Golconda	0-8	Very fine sandy loam.	ML	A-4	5-10	90-100	90-100	75-90	50-70	15-25	NP-5
	8-27	Gravelly clay loam, clay loam.	GC, CL	A-6, A-7	0	60-95	55-90	50-90	40-70	35-45	15-20
	27-43	Cemented	---	---	---	---	---	---	---	---	---
	43-60	Stratified very gravelly sandy loam to extremely gravelly loamy coarse sand.	GP-GM, GM, GP	A-1	0	20-55	15-50	5-40	0-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
411*:											
Blackhawk	0-8	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	65-75	---	NP
	8-14	Silt loam, loam, very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	70-80	30-35	NP-5
	14-17	Cemented	---	---	---	---	---	---	---	---	---
	17-38	Stratified loam to gravelly loamy coarse sand.	SM	A-1, A-2	0	75-90	70-85	35-50	10-30	---	NP
	38-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, SP, GP, SP-SM	A-1	0	45-60	20-50	10-35	0-10	---	NP
412*:											
Golconda	0-10	Gravelly very fine sandy loam.	GM-GC	A-4	0-10	65-75	55-65	45-65	35-50	20-30	5-10
	10-23	Gravelly clay loam, clay loam, silty clay loam.	GC, CL	A-6, A-7	0	60-95	55-90	50-90	40-70	35-45	15-20
	23-36	Cemented	---	---	---	---	---	---	---	---	---
	36-60	Very gravelly loamy coarse sand, very gravelly sandy loam.	GP-GM, GM	A-1	0	30-55	25-50	10-40	5-20	---	NP
Dun Glen	0-3	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	50-65	15-25	NP-5
	3-10	Silt loam, very fine sandy loam.	ML	A-4	0	95-100	90-100	85-100	55-70	15-25	NP-5
	10-60	Fine sandy loam, very fine sandy loam.	SM	A-4	0	90-100	85-100	70-85	35-50	15-25	NP-5
413*:											
Golconda	0-8	Gravelly very fine sandy loam.	GM-GC	A-4	0-10	65-75	55-65	45-65	35-50	20-30	5-10
	8-27	Gravelly clay loam, clay loam, silty clay loam.	GC, CL	A-6, A-7	0	60-95	55-90	50-90	40-70	35-45	15-20
	27-43	Cemented	---	---	---	---	---	---	---	---	---
	43-60	Very gravelly loamy coarse sand, very gravelly sandy loam.	GP-GM, GM	A-1	0	30-55	25-50	10-40	5-20	---	NP
Blownout land.											
420	0-7	Fine sand	SM	A-2	0	100	100	75-90	15-35	---	NP
Goldrun	7-60	Fine sand	SM	A-2	0	100	100	75-90	10-20	---	NP
422*:											
Goldrun	0-7	Loamy sand	SM	A-2	0	100	100	75-90	15-35	---	NP
	7-60	Fine sand	SM	A-2	0	100	100	75-90	10-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
422*:											
Old Camp	0-2	Very cobbly loam	GM, GM-GC, SM, SM-SC	A-2, A-4	25-55	60-70	55-65	45-55	30-40	15-25	NP-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
441*:											
Gund	0-4	Silt loam	CL-ML, ML	A-4	0	100	100	95-100	80-90	25-35	5-10
	4-23	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-90	25-35	5-15
	23-60	Silty clay, clay	CH	A-7	0	100	100	95-100	85-95	50-60	25-35
Umberland	0-4	Silt loam	ML	A-4	0	100	100	95-100	60-80	25-35	NP-10
	4-31	Silty clay loam, silty clay, clay.	CL, CH	A-7	0	100	100	95-100	85-95	40-55	20-30
	31-60	Silty clay loam, silty clay, clay.	CL, CH	A-7	0	100	100	95-100	85-95	40-55	20-30
442*:											
Gund	0-4	Silt loam	CL-ML, ML	A-4	0	100	100	95-100	80-90	25-35	5-10
	4-23	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-90	25-35	5-15
	23-60	Silty clay, clay	CH	A-7	0	100	100	95-100	85-95	50-60	25-35
Bubus	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
Wendane	0-13	Silt loam	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	13-27	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	27-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
443*:											
Gund	0-4	Silt loam	CL-ML, ML	A-4	0	100	100	95-100	80-90	25-35	5-10
	4-23	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-90	25-35	5-15
	23-60	Silty clay, clay	CH	A-7	0	100	100	95-100	85-95	50-60	25-35
Batan	0-5	Silt loam	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
461*:											
Hapgood	0-17	Very gravelly loam.	GM-GC	A-2	5-10	50-60	35-50	30-45	25-35	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
461*:											
Packer	0-10	Extremely gravelly loam.	GM-GC, GP-GC	A-2	15-25	30-40	15-30	10-25	5-20	20-30	5-10
	10-21	Extremely cobbly clay loam, extremely cobbly loam.	GC	A-2	40-55	40-55	30-45	25-40	15-30	30-40	10-15
	21-60	Extremely cobbly sandy loam, extremely cobbly loam.	GM	A-1	40-55	40-55	30-45	20-35	10-25	20-25	NP-5
Layview	0-3	Very gravelly sandy loam.	GM-GC	A-2	10-15	35-60	30-55	20-35	10-20	25-30	5-10
	3-12	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	10-15	35-60	30-55	25-45	20-40	30-40	15-20
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
466*:											
Hapgood	0-17	Very gravelly loam.	GM-GC	A-2	5-10	50-60	35-50	30-45	25-35	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
Tusel	0-20	Very gravelly loam.	GM	A-2	0-15	50-60	40-50	35-45	25-35	25-35	NP-10
	20-42	Extremely gravelly sandy clay loam, extremely gravelly clay loam, very gravelly clay loam.	GC	A-2	15-45	30-50	25-40	20-35	15-30	30-40	10-20
	42	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Winada	0-12	Gravelly loam----	GM-GC, SM-SC, SM, GM	A-4	0-5	65-80	55-70	50-65	35-50	20-30	NP-10
	12-24	Very gravelly clay loam.	GC	A-2	0-5	45-55	35-50	35-45	25-35	35-45	15-20
	24-36	Weathered bedrock	---	---	---	---	---	---	---	---	---
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
467*:											
Hapgood	0-17	Very gravelly loam.	GM-GC	A-2	5-10	50-60	35-50	30-45	25-35	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
467*:											
Sumine	0-6	Very gravelly loam.	GM-GC	A-2, A-4	10-15	50-65	45-60	40-50	30-40	20-30	5-10
	6-28	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cleavage	0-4	Extremely gravelly loam.	GM-GC	A-2	0-10	35-45	15-25	10-25	10-20	25-30	5-10
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
482*:											
Humdun	0-6	Silt loam	ML	A-4	0	100	100	90-100	70-90	30-40	NP-5
	6-24	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-5
	24-41	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-5
	41-60	Very gravelly loam.	GM	A-2, A-1	5-10	40-55	35-50	25-40	20-30	20-30	NP-5
Havingdon	0-3	Gravelly silt loam.	GM, GM-GC	A-4	0-10	60-70	50-65	50-60	35-50	25-35	5-10
	3-22	Very gravelly clay, very gravelly sandy clay, extremely gravelly clay.	GC	A-2	0	30-40	15-35	15-30	10-25	40-50	15-25
	22-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bucan	0-5	Cobbly loam	CL	A-6	20-25	75-85	70-80	65-75	50-60	30-35	10-15
	5-15	Clay	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	15-42	Cobbly clay, gravelly clay loam, gravelly clay.	CL	A-7	10-30	75-90	70-85	60-70	50-60	40-50	25-35
	42-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
486*:											
Havingdon	0-3	Gravelly loam	GM-GC, SM-SC	A-4	0	55-80	50-75	45-60	35-50	20-30	5-10
	3-22	Very gravelly clay, very gravelly sandy clay, extremely gravelly clay.	GC	A-2	0	30-40	15-35	15-30	10-25	40-50	15-25
	22-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
486*:											
Burrita	0-3	Extremely cobbly loam.	GM-GC	A-2, A-4	40-60	35-65	30-55	25-50	20-40	15-25	5-10
	3-18	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	18-22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
511	0-4	Silt loam	CL-ML	A-4	0	100	100	95-100	85-95	25-30	5-10
Hessing	4-11	Silt loam, silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	10-20
	11-18	Very fine sandy loam, silt loam.	CL-ML	A-4	0	95-100	95-100	85-95	60-70	25-30	5-10
	18-30	Gravelly loam	GM	A-4	0	60-70	55-65	45-55	35-50	25-30	NP-5
	30-60	Stratified very gravelly loamy coarse sand to extremely gravelly sand.	GP-GM, GW-GM	A-1	0	35-45	20-35	10-20	5-10	---	NP
512*:											
Hessing	0-4	Gravelly silt loam.	CL-ML	A-4	0	75-85	60-75	55-65	50-60	25-30	5-10
	4-11	Silt loam, silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	10-20
	11-18	Very fine sandy loam, silt loam.	CL-ML	A-4	0	95-100	95-100	85-95	60-70	25-30	5-10
	18-30	Gravelly loam	GM	A-4	0	60-70	55-65	45-55	35-50	25-30	NP-5
	30-60	Stratified very gravelly loamy coarse sand to extremely gravelly sand.	GP-GM, GW-GM	A-1	0	35-45	20-35	10-20	5-10	---	NP
Relley	0-8	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	75-90	25-35	5-10
	8-16	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	16-28	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	28-60	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
530	0-11	Fine sandy loam	SM	A-4	0	100	100	90-100	40-50	15-25	NP-5
Humboldt	11-60	Stratified silty clay loam to clay.	MH	A-7	0	90-100	90-100	85-100	80-100	50-60	15-25
531	0-11	Silty clay	MH	A-7	0	100	100	100	90-100	50-60	20-25
Humboldt	11-67	Stratified silty clay loam to clay.	MH	A-7	0	90-100	90-100	85-100	80-100	50-60	15-25
532	0-11	Silty clay loam	CL	A-7	0	100	100	100	90-100	40-50	20-25
Humboldt	11-60	Stratified silty clay loam to clay.	MH	A-7	0	90-100	90-100	85-100	80-100	50-60	15-25

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
571*:											
Jenor	0-6	Very fine sandy loam.	ML, CL-ML	A-4	0	90-100	90-100	80-95	50-65	15-25	NP-10
	6-16	Fine sandy loam, loam.	SM, SM-SC	A-4	0-5	80-95	75-95	60-75	35-50	15-25	NP-10
	16-26	Fine sandy loam, sandy loam, gravelly loam.	SM, SM-SC, ML, CL-ML	A-4, A-2	0-5	75-95	60-90	50-75	30-60	15-25	NP-10
	26-60	Indurated	---	---	---	---	---	---	---	---	---
Blacka	0-8	Very fine sandy loam.	ML	A-4	0	100	100	85-95	50-65	---	NP
	8-21	Fine sandy loam, very fine sandy loam.	SM, ML	A-4	0	100	100	70-90	40-60	25-30	NP-5
	21-31	Cemented	---	---	---	---	---	---	---	---	---
	31-64	Stratified sandy loam to loam.	SM	A-4	0	100	100	65-85	35-50	20-25	NP-5
573*:											
Jenor	0-6	Very fine sandy loam.	ML, CL-ML	A-4	0	90-100	90-100	80-95	50-65	15-25	NP-10
	6-16	Fine sandy loam, loam.	SM, SM-SC	A-4	0-5	80-95	75-95	60-75	35-50	15-25	NP-10
	16-26	Fine sandy loam, sandy loam, gravelly loam.	SM, SM-SC, ML, CL-ML	A-4, A-2	0-5	75-95	60-90	50-75	30-60	15-25	NP-10
	26-60	Indurated	---	---	---	---	---	---	---	---	---
Beoska	0-13	Very fine sandy loam.	ML, SM	A-4	0	85-95	75-95	70-80	45-65	15-25	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
Broyles	0-11	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
590 Landco	0-18	Silt loam	ML	A-4	0	100	100	95-100	85-90	20-25	NP-5
	18-44	Silty clay, silty clay loam.	CL, CH	A-7	0	100	100	95-100	90-95	40-55	20-30
	44-69	Silt loam	CL	A-6	0	100	100	95-100	90-95	30-35	10-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
602---------- Misad	0-7	Gravelly sandy loam.	SM, SM-SC	A-1, A-2	0-5	65-80	55-70	45-60	20-35	15-25	NP-10
	7-31	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	31-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP
605*: Misad----------	0-7	Gravelly loam----	SM, SM-SC, GM, GM-GC	A-2, A-4	0-5	65-80	55-70	50-65	30-50	15-25	NP-10
	7-31	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	31-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP
Creemon---------	0-10	Silt loam--------	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-45	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	45-60	Stratified gravelly very fine sandy loam to fine sandy loam.	SM	A-4	0	80-90	70-85	60-70	35-50	---	NP
Rednik----------	0-6	Silt loam--------	ML	A-4	0-5	90-100	90-100	80-95	60-75	20-30	NP-5
	6-17	Very gravelly sandy loam, extremely gravelly loam, very gravelly sandy clay loam.	GC, GM-GC	A-2	5-30	35-60	30-50	20-35	15-30	25-35	5-15
	17-60	Very gravelly sandy loam, very gravelly sand, extremely gravelly loamy sand.	GP-GM, GM	A-1	5-30	35-60	30-50	15-35	5-25	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
631*:											
McConnel	0-2	Loam	ML	A-4	0	95-100	85-95	70-80	50-60	15-25	NP-5
	2-12	Loam, sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-80	45-60	15-25	NP-5
	12-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP
Tulase	0-6	Silt loam	CL-ML, ML	A-4	0	100	100	100	90-100	15-25	NP-10
	6-60	Very fine sandy loam, silt loam.	CL-ML, ML	A-4	0	100	100	95-100	70-85	15-25	NP-10
660	0-4	Silt loam	CL, ML	A-6, A-7	0	100	100	95-100	80-90	30-45	10-15
Needle Peak	4-60	Silt loam, silty clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	80-95	30-50	10-20
670*:											
Filiran	0-7	Silt loam	ML, CL-ML	A-4	0	90-100	90-100	80-95	50-70	15-25	NP-10
	7-12	Gravelly silt loam.	GM-GC, GC, SM-SC, SC	A-4, A-6	0-5	65-80	55-70	45-60	35-50	20-35	5-20
	12-33	Clay, silty clay loam, gravelly clay.	CL, CH	A-7	0	80-100	70-90	65-85	60-80	40-55	25-35
	33-60	Cemented	---	---	---	---	---	---	---	---	---
Pineval	0-5	Gravelly fine sandy loam.	SM-SC	A-2	0	65-85	60-75	50-70	20-35	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP
Kingingham	0-7	Gravelly very fine sandy loam.	SM	A-2, A-4	0-5	70-85	55-70	50-65	30-50	15-25	NP-5
	7-22	Gravelly clay loam, gravelly clay, gravelly silty clay loam.	GC, CL, CH	A-7	0-5	70-85	55-70	50-65	45-60	40-55	20-30
	22-60	Indurated	---	---	---	---	---	---	---	---	---
680*:											
Skullwak	0-10	Silt loam	CL	A-6	0	100	100	90-100	85-100	30-40	10-20
	10-60	Stratified silty clay loam to silty clay.	CH, CL	A-7	0	100	100	95-100	90-100	40-60	20-40
Umberland	0-4	Silt loam	ML	A-4	0	100	100	95-100	60-80	25-35	NP-10
	4-60	Silty clay, silty clay loam.	CL, CH	A-7	0	100	100	90-100	85-95	40-55	20-30

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
680*:											
Wendane	0-13	Silt loam	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	13-27	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	27-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
684	0-13	Silt loam	ML, CL	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
Ocala	13-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20
700	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
Orovada	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
701	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
Orovada	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-65	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
702	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
Orovada	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	80-100	80-95	65-80	40-60	20-30	NP-5
	20-45	Stratified fine sandy loam to silt loam.	SM	A-4	0	80-100	80-95	65-80	35-50	20-30	NP-5
	45-60	Cemented	---	---	---	---	---	---	---	---	---
703*:											
Orovada	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Goldrun	0-7	Fine sand	SM	A-2	0	100	100	75-90	15-35	---	NP
	7-67	Fine sand	SM	A-2	0	100	100	75-90	10-20	---	NP
704*:											
Orovada	0-8	Loam	ML	A-4	0	95-100	90-100	80-95	60-75	25-35	NP-5
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Kodra	0-4	Silt loam	ML, CL-ML	A-4	0	85-100	75-100	65-90	60-80	20-30	NP-10
	4-30	Loam, sandy loam	SM-SC, CL-ML	A-4, A-2	0	85-100	75-100	55-80	30-60	20-25	5-10
	30-51	Cemented	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
704*:											
Puett	0-4	Gravelly sandy loam.	GM, SM	A-2	5-10	55-80	50-75	40-60	25-35	15-20	NP-5
	4-15	Coarse sandy loam, gravelly sandy loam, loam.	SM, ML, GM	A-1, A-2, A-4	0	55-95	50-90	30-80	15-55	---	NP
	15	Weathered bedrock	---	---	---	---	---	---	---	---	---
705*:											
Orovada	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Creemon	0-10	Silt loam	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-45	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	45-60	Stratified gravelly very fine sandy loam to fine sandy loam.	SM	A-4	0	80-90	70-85	60-70	35-50	---	NP
706*:											
Orovada	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Wieland	0-5	Gravelly loam	GC, CL, SC	A-6	0-5	60-85	50-75	45-70	35-60	25-35	10-15
	5-26	Gravelly clay, clay.	CH, SC	A-7	0-5	75-95	55-90	50-80	45-75	50-60	25-35
	26-52	Gravelly sandy clay loam, gravelly clay loam.	GC, SC	A-6, A-2	0-5	60-85	50-70	40-70	25-50	35-40	15-20
	52-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
Chiara	0-5	Fine sandy loam	SM	A-4	0	95-100	90-100	65-75	40-50	---	NP
	5-16	Very fine sandy loam, loam, silt loam.	ML	A-4	0	95-100	90-100	80-95	70-80	25-35	NP-5
	16-20	Indurated	---	---	---	---	---	---	---	---	---
707*:											
Orovada	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
707*:											
Goldrun	0-7	Fine sand	SM	A-2	0	100	100	75-90	15-35	---	NP
	7-60	Fine sand	SM	A-2	0	100	100	75-90	10-20	---	NP
708*:											
Orovada	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Reina	0-7	Loam	CL-ML, ML	A-4	0	90-100	85-100	80-90	60-70	25-35	5-10
	7-18	Very gravelly clay, very gravelly clay loam.	GC, GM	A-2, A-7	10-25	40-60	35-55	30-55	25-50	40-60	15-25
	18-26	Indurated	---	---	---	---	---	---	---	---	---
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
709*:											
Orovada	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Sodhouse	0-10	Stony very fine sandy loam.	ML, GM, SM	A-4	5-15	65-100	60-90	55-75	40-55	15-25	NP-5
	10-17	Fine sandy loam, very fine sandy loam, loam.	ML, SM	A-4	0	80-100	75-90	65-85	35-55	15-25	NP-5
	17-29	Indurated	---	---	---	---	---	---	---	---	---
	29-60	Extremely gravelly sandy loam, very gravelly loamy sand.	GM, GP-GM	A-1	5-20	25-60	15-50	10-40	5-25	---	NP
711 Paranat	0-20	Silty clay loam	ML	A-6, A-7	0	100	100	95-100	90-100	35-45	10-15
	20-48	Stratified silt loam to silty clay loam.	ML	A-4, A-6	0	100	100	95-100	90-100	30-40	5-15
	48-60	Stratified very fine sandy loam to silty clay.	ML	A-4, A-6	0	100	100	85-95	75-90	30-40	5-15
713 Paranat	0-20	Silty clay loam	ML	A-6, A-7	0	100	100	95-100	90-100	35-45	10-15
	20-60	Silty clay loam, silt loam.	ML	A-4, A-6	0	100	100	95-100	90-100	30-40	5-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
714---------- Paranat	0-20	Silty clay loam	ML	A-6, A-7	0	100	100	95-100	90-100	35-45	10-15
	20-48	Stratified silt loam to silty clay loam.	ML	A-4, A-6	0	100	100	95-100	90-100	30-40	5-15
	48-60	Stratified very fine sandy loam to silty clay.	ML	A-4, A-6	0	100	100	85-95	75-90	30-40	5-15
731---------- Yipor	0-8	Silt loam--------	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	8-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
740*. Playas											
770---------- Prida	0-7	Silt loam--------	ML, CL-ML	A-4	0	95-100	95-100	95-100	70-80	15-25	NP-10
	7-60	Silt loam, silty clay loam.	ML	A-6, A-4, A-7	0	95-100	95-100	95-100	75-90	30-45	5-15
774*:											
Prida----------	0-5	Silty clay loam	CL	A-6	0	95-100	95-100	95-100	80-95	35-40	15-20
	5-62	Silt loam, silty clay loam.	ML	A-6, A-4, A-7	0	95-100	95-100	95-100	75-90	30-45	5-15
Sonoma----------	0-8	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	80-95	35-50	15-25
	8-60	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	85-95	35-50	15-25
780---------- Pumper	0-12	Silt loam--------	ML	A-4	0	95-100	85-100	75-85	60-70	20-30	NP-5
	12-60	Stratified very gravelly loam to extremely gravelly coarse sand.	GP, GP-GM	A-1	0-5	20-40	20-35	10-20	0-10	---	NP
800---------- Raglan	0-8	Silt loam--------	ML	A-4	0	95-100	95-100	85-95	75-85	30-40	5-10
	8-47	Stratified silt loam to fine sandy loam.	ML	A-6	0	95-100	95-100	80-90	60-70	35-40	10-15
	47-60	Stratified gravelly loamy sand to very gravelly coarse sand.	SP-SM, SM	A-1	0	60-70	40-60	25-35	5-15	---	NP
804---------- Raglan	0-8	Silty clay loam	CL	A-7	0	100	95-100	90-100	85-95	40-50	15-25
	8-47	Stratified silt loam to fine sandy loam.	ML	A-6	0	95-100	95-100	80-90	60-70	35-40	10-15
	47-60	Stratified gravelly loamy sand to very gravelly coarse sand.	SP-SM, SM	A-1	0	60-70	40-60	25-35	5-15	---	NP
805---------- Raglan	0-6	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	85-95	75-85	25-35	5-10
	6-14	Silt loam--------	CL-ML, CL	A-4, A-6	0	95-100	95-100	85-95	75-85	25-40	5-15
	14-64	Stratified very fine sandy loam to silty clay loam.	CL, ML	A-4, A-6	0	95-100	95-100	85-95	60-80	30-40	5-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
814*:											
Quarz	0-7	Very gravelly loam.	GC	A-2	0-15	40-55	35-50	30-45	20-35	25-35	10-15
	7-26	Very gravelly clay, very gravelly clay loam.	GC	A-2, A-7	0-25	30-55	25-50	20-45	15-40	45-60	20-30
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Linrose	0-8	Very gravelly loam.	GM	A-2, A-4, A-1	0-15	40-50	35-50	30-45	20-40	15-25	NP-5
	8-26	Very gravelly loam, very gravelly sandy loam.	GC, GM-GC	A-2	0-15	40-60	30-50	25-45	15-35	25-35	5-15
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Slaven	0-5	Extremely gravelly loam.	GC	A-2	10-20	30-45	15-25	15-25	10-20	25-35	10-15
	5-22	Extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam.	GC	A-2	0	25-35	15-25	15-20	10-20	40-50	15-25
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
816*:											
Quarz	0-7	Cobbly loam	CL	A-6	25-30	85-95	80-90	60-70	50-60	25-35	10-15
	7-26	Very gravelly clay, very gravelly clay loam.	GC	A-2, A-7	0-25	30-55	25-50	20-45	15-40	45-60	20-30
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Linrose	0-8	Very cobbly loam	GM, SM	A-4, A-2	30-45	55-75	50-70	45-65	30-45	15-25	NP-5
	8-26	Very gravelly loam, very gravelly sandy loam.	GC, GM-GC	A-2	0-15	40-60	30-50	25-45	15-35	25-35	5-15
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cleavage	0-4	Extremely cobbly loam.	GM-GC, GC	A-2	45-55	35-55	30-45	25-40	20-35	25-35	5-15
	4-15	Very cobbly clay loam, extremely cobbly sandy clay loam, very gravelly clay loam.	GC	A-2	25-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
830----------	0-9	Silt loam--------	CL-ML	A-4	0	100	100	95-100	80-85	25-30	5-10
Reese	9-60	Stratified silt loam to silty clay loam.	CL	A-6	0	100	90-100	75-90	70-85	25-35	10-15
835*:											
Reese----------	0-9	Silt loam--------	CL-ML	A-4	0	100	100	95-100	80-85	25-30	5-10
	9-60	Stratified silt loam to silty clay loam.	CL	A-6	0	100	90-100	75-90	70-85	25-35	10-15
Ocala----------	0-6	Silt loam--------	ML, CL	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
	6-13	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	100	100	95-100	85-95	30-50	10-20
	13-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20
841----------	0-10	Silt loam--------	CL-ML	A-4	0	100	100	85-95	65-80	25-30	5-10
Wendane Variant	10-18	Gravelly silt loam.	CL-ML, CL, GM-GC, GC	A-2, A-4, A-6	0	55-75	50-70	40-65	30-55	25-35	5-15
	18-60	Very gravelly loam.	GM-GC, GC	A-2	0	45-60	35-50	30-45	20-35	25-35	5-15
850----------	0-8	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	75-90	25-35	5-10
Relley	8-16	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	16-28	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	28-63	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
851----------	0-8	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	75-90	25-35	5-10
Relley	8-16	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	16-28	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	28-50	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	50-60	Cemented---------	---	---	---	---	---	---	---	---	---
852----------	0-8	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	75-90	25-35	5-10
Relley	8-16	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	16-28	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	28-60	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
853----------	0-8	Silty clay loam	CL, ML	A-6, A-7	0	95-100	95-100	95-100	85-100	35-45	10-20
Relley	8-16	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	16-28	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	28-60	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
855*:											
Relley----------	0-8	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	75-90	25-35	5-10
	8-16	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	16-28	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	28-60	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
Broyles----------	0-5	Very fine sandy loam.	SM, ML	A-4	0	90-100	90-100	85-95	45-60	---	NP
	5-14	Very fine sandy loam.	SM, ML	A-4	0	90-100	90-100	85-95	40-55	---	NP
	14-60	Gravelly fine sandy loam.	SM	A-1, A-2	0	70-85	55-70	45-60	15-30	---	NP
861----------	0-10	Silty clay loam	ML, CL	A-7	0	100	100	95-100	90-95	40-50	15-20
Rixie	10-60	Stratified silt loam to silty clay.	CL, ML	A-6, A-7	0	100	100	95-100	60-75	35-50	10-25

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
862---------- Rixie	0-10	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	90-95	35-45	15-20
	10-60	Stratified silt loam to silty clay.	CL	A-6, A-7	0	100	100	95-100	75-85	35-45	15-20
863*:											
Rixie----------	0-10	Silty clay loam	ML, CL	A-7	0	100	100	95-100	90-95	40-50	15-20
	10-60	Stratified silt loam to silty clay.	CL, ML	A-6, A-7	0	100	100	95-100	60-75	35-50	10-25
Rixie, sodic----	0-15	Silt loam--------	CL	A-6	0	100	100	95-100	90-95	30-40	10-15
	15-60	Stratified silt loam to silty clay.	CL, ML	A-6, A-7	0	100	100	95-100	60-75	35-50	10-25
864---------- Rixie	0-10	Silty clay loam	ML, CL	A-7	0	100	100	95-100	90-95	40-50	15-20
	10-43	Stratified silt loam to silty clay.	CL, ML	A-6, A-7	0	100	100	95-100	60-75	35-50	10-25
	43-62	Stratified very gravelly sand to fine sandy loam.	SM	A-1, A-2	0	60-90	35-70	20-65	10-35	---	NP
870*:											
Roca----------	0-5	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bregar----------	0-4	Gravelly loam----	GM-GC, SM-SC	A-4	0	60-80	55-75	50-65	35-50	15-25	5-10
	4-11	Very gravelly clay loam, extremely gravelly loam, extremely cobbly sandy clay loam.	GC	A-2	0-40	25-45	20-35	15-30	15-25	35-45	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Linrose----------	0-8	Gravelly loam----	ML, GM	A-4	0-10	65-85	55-75	50-70	35-60	15-25	NP-5
	8-26	Very gravelly loam, very gravelly sandy loam.	GC, GM-GC	A-2	0-15	40-60	30-50	25-45	15-35	25-35	5-15
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
872*:											
Roca----------	0-5	Very gravelly loam.	GC	A-2	0-10	35-60	30-50	25-40	20-35	25-35	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-15	60-75	40-50	30-45	25-35	45-60	25-35
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
872*:											
Linrose	0-8	Very gravelly loam.	GM	A-2, A-4, A-1	0-15	40-50	35-50	30-45	20-40	15-25	NP-5
	8-26	Very gravelly loam, very gravelly sandy loam.	GC, GM-GC	A-2	0-15	40-60	30-50	25-45	15-35	25-35	5-15
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Wiskan	0-16	Very gravelly loam.	GM, GM-GC	A-1, A-2, A-4	0-15	40-60	30-50	25-50	20-40	20-30	NP-10
	16-28	Very gravelly clay loam, very gravelly loam, extremely gravelly clay loam.	GC	A-2	10-25	40-55	30-45	25-45	20-35	30-40	10-20
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
873*:											
Roca	0-5	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan	0-13	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	45-60	40-55	30-45	25-30	5-10
	13-38	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	38-42	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
875*:											
Roca	0-5	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Glean	0-6	Gravelly silt loam.	GM, SM, ML	A-4	0-10	55-80	50-75	45-65	40-55	20-30	NP-5
	6-49	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0-25	30-65	25-60	20-50	10-35	20-30	NP-5
	49-53	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
875*:											
Bregar	0-4	Extremely gravelly loam.	GM-GC, GC	A-2	10-20	35-50	20-30	15-25	10-20	25-35	5-15
	4-11	Very gravelly sandy clay loam, extremely cobbly clay loam, very gravelly clay loam.	GC	A-2	5-45	40-50	25-35	20-30	10-25	35-45	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
881	0-10	Silt loam	ML	A-4	0	100	100	75-90	60-75	20-30	NP-5
Rose Creek	10-60	Stratified very fine sandy loam to gravelly sand.	SM	A-4	0	90-100	85-95	70-85	35-50	15-25	NP-5
882	0-10	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	85-95	35-45	15-25
Rose Creek	10-60	Stratified gravelly sand to silt loam.	SM	A-2, A-4	0	85-100	70-95	50-70	30-50	20-25	NP-5
883*:											
Rose Creek	0-10	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	85-95	35-45	15-25
	10-60	Stratified gravelly sand to silt loam.	SM	A-2, A-4	0	85-100	70-95	50-70	30-50	20-25	NP-5
Paranat	0-20	Silty clay loam	ML	A-6, A-7	0	100	100	95-100	90-100	35-45	10-15
	20-48	Stratified silt loam to silty clay loam.	ML	A-4, A-6	0	100	100	95-100	90-100	30-40	5-15
	48-60	Stratified very fine sandy loam to silty clay.	ML	A-4, A-6	0	100	100	85-95	75-90	30-40	5-15
891	0-9	Loam	CL-ML, CL	A-4	0	100	100	85-95	60-75	25-30	5-10
Rosney	9-50	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	80-90	30-45	10-20
	50-60	Cemented	---	---	---	---	---	---	---	---	---
892	0-7	Silt loam	ML	A-4	0	100	100	95-100	85-90	20-25	NP-5
Rosney	7-25	Silt loam	CL-ML	A-4	0	100	100	95-100	80-95	20-30	5-10
	25-60	Stratified silt loam to silty clay.	CL	A-6, A-7	0	100	100	95-100	85-95	35-45	15-20
970, 971	0-13	Very fine sandy loam.	ML	A-4	0	100	100	85-95	65-80	15-25	NP-5
Soolake	13-22	Fine sandy loam, very fine sandy loam.	SM	A-4	0	100	100	75-90	40-50	15-25	NP-5
	22-60	Stratified loamy fine sand to sand.	SM	A-2	0	100	85-100	65-75	20-30	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
972*:											
Soolake	0-13	Very fine sandy loam.	ML	A-4	0	100	100	85-95	65-80	15-25	NP-5
	13-22	Fine sandy loam, very fine sandy loam.	SM	A-4	0	100	100	75-90	40-50	15-25	NP-5
	22-60	Stratified loamy fine sand to sand.	SM	A-2	0	100	85-100	65-75	20-30	---	NP
Dunphy	0-6	Very fine sandy loam.	ML	A-4	0	100	100	85-100	50-65	20-25	NP-5
	6-54	Very fine sandy loam, fine sandy loam.	ML	A-4	0	100	100	80-95	50-65	20-25	NP-5
	54-60	Cemented	---	---	---	---	---	---	---	---	---
Argenta	0-7	Fine sandy loam	SM, ML	A-4	0	100	100	70-85	40-55	---	NP
	7-45	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	90-100	80-95	50-65	---	NP
	45-60	Gravelly sandy loam.	SM	A-1, A-2	0	95-100	55-65	35-45	20-30	15-25	NP-5
980	0-4	Very fine sandy loam.	ML	A-4	0	100	100	90-100	55-65	15-25	NP-5
Sombrero	4-16	Silt loam, silty clay loam.	CL	A-6	0	100	100	95-100	80-90	30-40	10-20
	16-42	Cemented	---	---	---	---	---	---	---	---	---
	42-60	Stratified loam to gravelly sand.	SM, ML, GM	A-2, A-4	0	60-95	55-90	45-70	30-55	15-25	NP-5
990	0-8	Silt loam	CL	A-6	0	100	100	100	95-100	30-35	10-15
Sonoma	8-60	Stratified silt loam to silty clay loam.	ML, CL	A-6, A-7	0	100	100	100	95-100	35-50	10-25
991	0-8	Silt loam	ML	A-4	0	100	100	100	95-100	30-35	5-10
Sonoma	8-60	Stratified silt loam to silty clay loam.	ML, CL	A-6, A-7	0	100	100	100	95-100	35-50	10-25
992	0-8	Silt loam	CL	A-6	0	100	100	100	95-100	30-35	10-15
Sonoma	8-60	Stratified silt loam to silty clay loam.	ML, CL	A-6, A-7	0	100	100	100	95-100	35-50	10-25
993	0-8	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	80-95	35-50	15-25
Sonoma	8-65	Stratified silt loam to silty clay loam.	CL, ML	A-6, A-7	0	100	100	100	95-100	35-50	10-25
994	0-8	Silty clay loam	ML, CL	A-6, A-7	0	100	100	100	95-100	35-50	10-25
Sonoma	8-60	Stratified silt loam to silty clay loam.	ML, CL	A-6, A-7	0	100	100	100	95-100	35-50	10-25
995	0-8	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	80-95	35-50	15-25
Sonoma	8-60	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	85-95	35-50	15-25

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
996*:											
Sonoma, strongly saline	0-12	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	80-95	35-50	15-25
	12-60	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	85-95	35-50	15-25
Sonoma	0-12	Silty clay	MH	A-7	0	100	100	95-100	90-100	55-65	20-25
	12-60	Stratified silt loam to silty clay loam.	CL, ML	A-6, A-7	0	100	100	100	95-100	35-50	10-25
997 Sonoma	0-8	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	80-95	35-50	15-25
	8-60	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	85-95	35-50	15-25
1021*:											
Susie Creek	0-9	Silt loam	CL-ML, ML	A-4	0	90-100	85-95	80-95	70-80	25-35	5-10
	9-27	Clay loam, silty clay, clay.	CL, CH	A-7	0	90-100	85-95	80-95	65-90	40-55	20-30
	27-42	Sandy loam, loam	SM, ML	A-4	0	85-100	75-95	60-80	45-65	20-25	NP-5
	42	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Millerlux	0-10	Very cobbly loam	GC, GM-GC	A-6, A-4	25-50	55-70	50-65	40-55	35-50	25-35	5-15
	10-15	Clay	CH	A-7	0-10	90-100	85-100	80-95	60-75	50-65	25-40
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1031 Teman	0-8	Silt loam	ML	A-4, A-6	0	100	100	95-100	70-90	30-40	5-15
	8-63	Silt loam, silty clay loam.	ML	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
1032 Teman	0-8	Silt loam	ML	A-4, A-6	0	100	100	95-100	70-90	30-40	5-15
	8-40	Silt loam, silty clay loam.	ML	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
	40-60	Silty clay	MH	A-7	0	100	100	95-100	90-100	50-65	15-25
1033 Teman	0-8	Silt loam	ML	A-4, A-6	0	100	100	95-100	70-90	30-40	5-15
	8-60	Silt loam, silty clay loam.	ML	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
1040*:											
Tenabo, gravelly	0-6	Gravelly very fine sandy loam.	SM, GM	A-2, A-4	0-5	60-70	50-60	45-55	25-40	---	NP
	6-18	Silty clay loam, clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-90	60-90	50-80	30-40	10-20
	18-40	Indurated	---	---	---	---	---	---	---	---	---
	40-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-	Percentage passing sieve number--				Liquid	Plas-
			Unified	AASHTO	ments > 3 inches	4	10	40	200	limit	ticity index
	In				Pct					Pct	
1040*:											
Allor	0-12	Very cobbly loam	SM-SC, GM-GC	A-2, A-4	30-50	60-75	45-70	40-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
Tenabo	0-6	Very cobbly loam	SM-SC, SM	A-4	30-50	75-90	60-75	50-70	35-50	15-25	NP-10
	6-18	Clay loam, sandy clay loam.	CL	A-6	0	90-100	85-95	70-85	50-65	30-40	15-25
	18-40	Indurated	---	---	---	---	---	---	---	---	---
	40-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GW-GM, GM, GP-GM	A-1	10-25	40-60	35-55	25-40	5-20	---	NP
1041*:											
Tenabo	0-13	Silt loam	ML	A-4	0	95-100	90-100	85-95	75-85	25-35	NP-10
	13-20	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-95	60-90	50-85	30-40	15-25
	20-39	Indurated	---	---	---	---	---	---	---	---	---
	39-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
Ricert	0-6	Gravelly silt loam.	SM-SC	A-4	0	75-85	55-75	40-55	35-50	20-30	5-10
	6-18	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP
1042	0-6	Very gravelly loam.	GM	A-1, A-2	5-10	40-55	35-50	25-45	20-30	15-25	NP-5
Tenabo	6-18	Silty clay loam, clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-90	60-90	50-80	30-40	10-20
	18-40	Indurated	---	---	---	---	---	---	---	---	---
	40-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1062*:											
Tomera----------	0-8	Gravelly loam----	SM, GM, SM-SC, GM-GC	A-2, A-4	0	55-80	50-75	35-70	25-50	20-30	NP-10
	8-33	Gravelly clay, clay, gravelly sandy clay.	CH, SC	A-7	0	70-85	55-80	45-75	35-60	50-65	25-35
	33-60	Extremely gravelly sandy loam, very gravelly loamy sand, very cobbly loam.	GM	A-1	1-40	40-50	30-45	20-40	10-25	---	NP
Snapp----------	0-10	Gravelly very fine sandy loam.	GM, SM	A-2	0	55-80	50-75	45-70	25-35	20-25	NP-5
	10-30	Gravelly clay, gravelly clay loam, clay.	CH, GC	A-7	0	55-100	50-90	45-85	35-70	50-75	30-50
	30-60	Extremely gravelly loamy sand, very gravelly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	0	25-60	15-50	10-40	5-15	---	NP
Whirlo----------	0-7	Gravelly sandy loam.	SM	A-2, A-4	0-10	65-80	60-75	40-55	25-40	15-25	NP-5
	7-13	Gravelly sandy loam, gravelly loam, fine sandy loam.	SM, GM	A-2, A-4	0-10	60-95	55-85	40-60	25-50	15-25	NP-5
	13-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GM	A-1, A-2	5-30	45-60	25-50	20-40	10-30	15-25	NP-5
1080*:											
Trunk----------	0-5	Very cobbly loam	GM-GC, SM-SC, SC, GC	A-4, A-6	30-45	55-80	50-75	45-70	35-50	25-35	5-15
	5-28	Gravelly clay, gravelly clay loam.	CL, GC, CH	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	28-32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burrita----------	0-3	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	3-18	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	18-22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1082*:											
Trunk	0-5	Loam	CL-ML, ML	A-4	0	85-100	80-100	70-90	55-70	20-30	NP-10
	5-28	Gravelly clay, gravelly clay loam.	CL, CH, GC	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	28-32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reina	0-7	Loam	CL-ML, ML	A-4	0	90-100	85-100	80-90	60-70	25-35	5-10
	7-18	Very gravelly clay, very gravelly clay loam.	GC, GM	A-2, A-7	10-25	40-60	35-55	30-55	25-50	40-60	15-25
	18-26	Indurated	---	---	---	---	---	---	---	---	---
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1084*:											
Trunk	0-5	Cobbly loam	CL-ML, ML	A-4	15-30	75-95	70-90	60-90	50-70	20-30	NP-10
	5-28	Gravelly clay, gravelly clay loam.	CL, CH, GC	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	28-32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burrita	0-3	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	3-18	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	18-22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
1085*:											
Trunk	0-5	Gravelly loam	GM-GC, SM-SC, GM, SM	A-4	0-5	55-80	50-75	45-70	35-50	20-30	NP-10
	5-28	Gravelly clay, gravelly clay loam.	CL, CH, GC	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	28-32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Dewar	0-4	Very cobbly loam	SM-SC, CL-ML	A-4	40-50	70-95	65-80	55-75	40-55	25-30	5-10
	4-14	Cobbly silty clay loam.	CL	A-6, A-7	25-30	85-95	80-90	75-90	65-85	35-45	15-20
	14-19	Very cobbly silt loam.	GC	A-6	30-40	50-60	45-55	40-50	35-45	30-35	10-15
	19-32	Indurated	---	---	---	---	---	---	---	---	---
	32-60	Gravelly sandy loam.	GM, SM	A-1	0	55-65	50-60	30-40	15-25	20-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1085*:											
Stingdorn	0-7	Very cobbly loam	SM-SC	A-2, A-4	30-50	70-85	55-70	40-55	30-40	20-30	5-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1086*:											
Trunk	0-5	Cobbly loam	CL-ML, ML	A-4	15-30	75-95	70-90	60-90	50-70	20-30	NP-10
	5-28	Gravelly clay, gravelly clay loam.	CL, CH, GC	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	28-32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Malpais	0-3	Gravelly loam	GM	A-4	5-10	60-75	55-70	45-60	35-50	20-25	NP-5
	3-15	Very gravelly loam, very gravelly sandy loam, very cobbly sandy loam.	GM	A-1, A-2	5-35	50-60	35-50	30-45	20-35	20-25	NP-5
	15-60	Extremely cobbly loam, very cobbly loam, extremely cobbly sandy loam.	GM	A-1, A-2	40-50	40-55	35-50	25-35	20-30	20-25	NP-5
Minat	0-9	Gravelly loam	GM-GC, GC	A-4, A-6	5-10	65-75	55-70	50-65	35-50	25-35	5-15
	9-27	Very gravelly loam.	GC, GM-GC	A-2	0-10	45-60	30-50	25-45	20-35	25-35	5-15
	27-60	Very gravelly loam, very gravelly fine sandy loam.	GM-GC, GC	A-2	0-10	45-60	30-50	20-45	15-30	25-35	5-15
1087*:											
Trunk	0-5	Very cobbly loam	GM-GC, SM-SC, SC, GC	A-4, A-6	30-45	55-80	50-75	45-70	35-50	25-35	5-15
	5-28	Gravelly clay, gravelly clay loam.	CL, GC, CH	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	28-32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burrita	0-3	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	3-18	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	18-22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1087*:											
Colbar	0-3	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1091	0-6	Silt loam	CL-ML, ML	A-4	0	100	100	100	90-100	15-25	NP-10
Tulase	6-60	Very fine sandy loam, silt loam.	CL-ML, ML	A-4	0	100	100	95-100	70-85	15-25	NP-10
1092*:											
Tulase	0-6	Silt loam	CL-ML, ML	A-4	0	100	100	100	90-100	15-25	NP-10
	6-60	Very fine sandy loam, silt loam.	CL-ML, ML	A-4	0	100	100	95-100	70-85	15-25	NP-10
Bubus	0-6	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	6-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
McConnel	0-2	Loam	ML	A-4	0	95-100	85-95	70-80	50-60	15-25	NP-5
	2-12	Loam, sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	65-80	45-60	15-25	NP-5
	12-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP
1102	0-11	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	90-100	65-85	20-30	NP-10
Tweba	11-21	Fine sandy loam, very fine sandy loam, loam.	ML	A-4	0	100	100	80-95	50-65	20-25	NP-5
	21-60	Stratified very fine sandy loam to loamy sand.	SM	A-2, A-4	0	90-100	90-100	55-75	25-45	15-20	NP-5
1110	0-4	Silty clay loam	CL	A-7	0	100	100	95-100	85-100	40-50	20-25
Umberland	4-60	Silty clay loam, silty clay.	CL, CH	A-7	0	100	100	95-100	85-100	40-55	25-30
1140	0-13	Silt loam	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
Wendane	13-27	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	27-65	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1141----------	0-13	Silt loam--------	ML	A-4	0	100	100	90-100	85-100	30-40	5-10
Wendane	13-40	Silt loam, silty clay loam.	ML	A-4	0	100	100	95-100	85-100	30-40	5-10
	40-60	Stratified sand to gravelly sand.	SP-SM, SM	A-1	0	75-95	65-85	25-40	5-15	---	NP
1142*:											
Wendane---------	0-13	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	80-95	55-70	20-30	NP-10
	13-27	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	27-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
Tweba----------	0-11	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	90-100	65-85	20-30	NP-10
	11-21	Fine sandy loam, very fine sandy loam, loam.	ML	A-4	0	100	100	80-95	50-65	20-25	NP-5
	21-60	Stratified very fine sandy loam to loamy sand.	SM	A-2, A-4	0	90-100	90-100	55-75	25-45	15-20	NP-5
1143----------	0-13	Silt loam--------	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
Wendane	13-27	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	27-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
1144*:											
Wendane---------	0-13	Silt loam--------	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	13-27	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	27-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
Batan----------	0-5	Silt loam--------	ML	A-4	0	100	100	95-100	85-95	30-35	5-10
	5-68	Stratified silt loam to silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Broyles---------	0-5	Silt loam--------	ML	A-4	0	100	100	90-100	60-80	20-25	NP-5
	5-11	Silt loam, very fine sandy loam, fine sandy loam.	ML, SM	A-4	0	95-100	90-100	75-90	40-55	20-25	NP-5
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
1145*:											
Wendane---------	0-13	Silt loam--------	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	13-27	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	27-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1145*: Playas.											
1146*: Wendane	0-13	Silt loam	ML	A-4	0	100	100	90-100	70-95	30-40	NP-10
	13-27	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	30-40	NP-10
	27-60	Stratified silt loam to clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
Sonoma	0-10	Silt loam	CL	A-6	0	95-100	95-100	85-100	70-90	30-35	10-15
	10-60	Stratified silt loam to silty clay loam.	CL, ML	A-6, A-7	0	100	100	100	95-100	35-50	10-25
Valmy	0-6	Very fine sandy loam.	SM	A-4	0	90-100	85-100	60-75	35-50	15-25	NP-5
	6-42	Stratified very fine sandy loam to gravelly coarse sandy loam.	SM	A-4, A-2, A-1	0-5	80-95	75-90	40-70	20-45	15-25	NP-5
	42-60	Gravelly sand, very gravelly sand.	SP-SM, SM, GP-GM, GM	A-1	0-10	40-75	30-70	20-45	5-15	---	NP
1150 Weso	0-5	Fine sandy loam	SM, ML	A-4	0	95-100	90-100	70-80	40-55	15-25	NP-5
	5-11	Fine sandy loam, very fine sandy loam, loam.	ML, CL-ML, SM, SM-SC	A-4	0	95-100	85-95	70-85	45-60	15-30	NP-10
	11-60	Fine sandy loam, very fine sandy loam.	ML, SM	A-4	0	95-100	85-95	70-85	45-60	15-25	NP-5
1158 Whirlo	0-7	Very fine sandy loam.	SM	A-4	0-5	90-100	90-100	75-90	35-50	20-25	NP-5
	7-13	Fine sandy loam	SM	A-2, A-4	0	90-100	85-100	65-80	25-40	20-25	NP-5
	13-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GP-GM	A-1	0-5	40-50	20-35	15-25	5-10	20-25	NP-5
1160 Whirlo	0-12	Gravelly loam	ML, GM	A-4	0	60-75	55-75	50-70	40-60	---	NP
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1162, 1163------- Whirlo	0-12	Silt loam--------	ML	A-4	0	80-95	75-90	70-85	55-70	20-25	NP-5
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
1165*:											
Whirlo----------	0-12	Gravelly loam----	ML, GM	A-4	0	60-75	55-75	50-70	40-60	---	NP
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
Creemon----------	0-10	Silt loam--------	ML	A-4	0	100	100	95-100	85-90	---	NP
	10-15	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	15-45	Stratified very fine sandy loam to silt loam.	ML	A-4	0	100	100	95-100	85-90	25-30	NP-5
	45-60	Stratified gravelly very fine sandy loam to fine sandy loam.	SM	A-4	0	80-90	70-85	60-70	35-50	---	NP
1166*:											
Whirlo----------	0-12	Silt loam--------	ML	A-4	0	80-95	75-90	70-85	55-70	20-25	NP-5
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
Pumper----------	0-12	Silt loam--------	ML	A-4	0	95-100	85-100	75-85	60-70	20-30	NP-5
	12-60	Stratified very gravelly loam to extremely gravelly coarse sand.	GP, GP-GM	A-1	0-5	20-40	20-35	10-20	0-10	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1168*:											
Whirlo----------	0-12	Gravelly very fine sandy loam.	ML, GM	A-4	0	60-75	55-75	50-70	40-60	---	NP
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
Oxcorel---------	0-5	Very fine sandy loam.	ML	A-4	0-5	90-100	90-100	70-85	50-65	20-30	NP-5
	5-20	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	20-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
1169*:											
Whirlo----------	0-12	Gravelly very fine sandy loam.	ML, GM	A-4	0	60-75	55-75	50-70	40-60	---	NP
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
Broyles---------	0-11	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
1170----------	0-5	Silt loam--------	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
Wholan	5-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
1174----------	0-6	Silt loam--------	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
Wholan	6-45	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
	45-60	Stratified very gravelly loam to very gravelly sand.	GP-GM, GM	A-1	0-10	35-45	30-40	15-25	5-20	15-25	NP-5
1177*:											
Wholan----------	0-5	Very fine sandy loam.	ML	A-4	0	100	100	95-100	75-80	15-25	NP-5
	5-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1177*:											
Rasille	0-6	Silt loam	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	6-15	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	15-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
1178*:											
Wholan	0-5	Silt loam	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
	5-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
Rasille	0-6	Silt loam	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	6-15	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	15-41	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	41-60	Stratified fine sandy loam to very gravelly coarse sand.	SM, GM	A-1	0	55-80	50-75	15-35	10-20	---	NP
1201*:											
Slaven	0-4	Very gravelly loam.	GM	A-2	0	45-55	35-45	30-40	25-30	25-30	NP-5
	4-22	Extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam.	GC	A-2	0-15	25-35	15-25	15-20	10-20	40-50	25-35
	22-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Linrose	0-8	Gravelly loam	ML, GM	A-4	0-10	65-85	55-75	50-70	35-60	15-25	NP-5
	8-26	Very gravelly loam, very gravelly sandy loam.	GC, GM-GC	A-2	0-15	40-60	30-50	25-45	15-35	25-35	5-15
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cleavage	0-4	Very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	0-10	50-70	30-50	25-45	20-40	25-35	5-15
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1202*:											
Slaven	0-4	Very gravelly loam.	GM	A-2	0	45-55	35-45	30-40	25-30	25-30	NP-5
	4-22	Extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam.	GC	A-2	0-15	25-35	15-25	15-20	10-20	40-50	25-35
	22-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Wiskan	0-16	Gravelly loam	SM, CL-ML, SM-SC, ML	A-4	0-15	70-85	60-75	55-75	40-60	20-30	NP-10
	16-28	Very gravelly clay loam, very gravelly loam, extremely gravelly clay loam.	GC	A-2	10-25	40-55	30-45	25-45	20-35	30-40	10-20
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Graley Variant	0-7	Very gravelly loam.	GM	A-1, A-2	0-5	35-55	30-50	25-45	20-30	15-25	NP-5
	7-15	Very gravelly clay loam, very gravelly clay.	GC	A-2, A-7	10-25	40-55	35-50	35-50	30-45	40-55	20-30
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1203*:											
Slaven	0-4	Very gravelly loam.	GM	A-2	0	45-55	35-45	30-40	25-30	25-30	NP-5
	4-22	Extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam.	GC	A-2	0-15	25-35	15-25	15-20	10-20	40-50	25-35
	22-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Glean	0-6	Gravelly loam	SM, GM	A-2, A-4	0-10	55-80	50-75	40-60	25-40	20-30	NP-5
	6-49	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0-25	30-65	25-60	20-50	10-35	20-30	NP-5
	49-53	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cleavage	0-4	Very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	0-10	50-70	30-50	25-45	20-40	25-35	5-15
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1212*:											
Wiskan	0-16	Gravelly silt loam.	SM, CL-ML, SM-SC, ML	A-4	0-15	70-85	60-75	55-75	40-60	20-30	NP-10
	16-28	Very gravelly clay loam, very gravelly loam, extremely gravelly clay loam.	GC	A-2	10-25	40-55	30-45	25-45	20-35	30-40	10-20
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Roca	0-5	Extremely cobbly sandy clay loam.	GC	A-2	50-65	45-60	25-40	20-35	15-30	30-40	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bregar	0-4	Extremely gravelly sandy loam.	GP-GC, GP-GM, GM-GC, GM	A-1, A-2	10-20	25-35	20-30	15-25	5-15	15-25	NP-10
	4-11	Very gravelly clay loam, extremely gravelly loam, extremely cobbly sandy clay loam.	GC	A-2	0-40	25-45	20-35	15-30	15-25	35-45	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1215*:											
Wiskan	0-16	Gravelly silt loam.	SM, CL-ML, SM-SC, ML	A-4	0-15	70-85	60-75	55-75	40-60	20-30	NP-10
	16-28	Very gravelly clay loam, very gravelly loam, extremely gravelly clay loam.	GC	A-2	10-25	40-55	30-45	25-45	20-35	30-40	10-20
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Locane	0-6	Very gravelly loam.	GM-GC	A-2	5-15	50-65	30-45	25-40	15-30	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1216*:											
Wiskan	0-16	Very gravelly silt loam.	GM, GM-GC	A-1, A-2, A-4	0-15	40-60	30-50	25-50	20-40	20-30	NP-10
	16-28	Very gravelly clay loam, very gravelly loam, extremely gravelly clay loam.	GC	A-2	10-25	40-55	30-45	25-45	20-35	30-40	10-20
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Linrose	0-8	Gravelly silt loam.	ML, GM	A-4	0-10	65-85	55-75	50-70	35-60	15-25	NP-5
	8-26	Very gravelly loam, very gravelly sandy loam.	GC, GM-GC	A-2	0-15	40-60	30-50	25-45	15-35	25-35	5-15
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1220*:											
Boulflat	0-6	Gravelly loam	GM	A-4	0	60-75	50-75	45-65	35-50	20-25	NP-5
	6-23	Gravelly loam, gravelly clay loam, gravelly sandy clay loam.	GC	A-2, A-6	0	60-75	50-75	45-65	25-50	30-35	10-15
	23-32	Cemented	---	---	---	---	---	---	---	---	---
	32-36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Havingdon	0-3	Gravelly silt loam.	GM, GM-GC	A-4	0-10	60-70	50-65	50-60	35-50	25-35	5-10
	3-22	Very gravelly clay, very gravelly sandy clay, extremely gravelly clay.	GC	A-2	0	30-40	15-35	15-30	10-25	40-50	15-25
	22-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Dewar	0-4	Cobbly loam	CL-ML	A-4	15-40	85-95	80-90	65-80	50-65	25-30	5-10
	4-14	Cobbly silty clay loam.	CL	A-6, A-7	25-30	85-95	80-90	75-90	65-85	35-45	15-20
	14-19	Very cobbly silt loam.	GC	A-6	30-40	50-60	45-55	40-50	35-45	30-35	10-15
	19-32	Indurated	---	---	---	---	---	---	---	---	---
	32-60	Gravelly sandy loam.	GM, SM	A-1	0	55-65	50-60	30-40	15-25	20-25	NP-5
1221*:											
Boulflat	0-6	Gravelly loam	GM	A-4	0	60-75	50-75	45-65	35-50	20-25	NP-5
	6-23	Gravelly loam, gravelly clay loam, gravelly sandy clay loam.	GC	A-2, A-6	0	60-75	50-75	45-65	25-50	30-35	10-15
	23-32	Cemented	---	---	---	---	---	---	---	---	---
	32-36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1221*:											
Colbar----------	0-3	Gravelly loam----	SM-SC, SM, GM, GM-GC	A-4	0-5	65-85	60-75	50-65	35-50	20-30	NP-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	75-90	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Old Camp--------	0-2	Very cobbly loam	GM, GM-GC, SM, SM-SC	A-2, A-4	25-55	60-70	55-65	45-55	30-40	15-25	NP-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1240*:											
Redflame--------	0-5	Very gravelly loam.	GM-GC, GM	A-2	0-25	40-55	35-50	30-40	20-35	25-35	5-10
	5-14	Very gravelly clay loam, very gravelly loam.	GC	A-2	5-10	45-60	35-50	25-40	15-30	30-40	10-15
	14-60	Very gravelly sandy loam.	GM-GC	A-2	5-10	45-60	30-45	20-35	10-25	15-25	5-10
Kingingham------	0-7	Gravelly very fine sandy loam.	SM	A-2, A-4	0-5	70-85	55-70	50-65	30-50	15-25	NP-5
	7-22	Gravelly clay loam, gravelly clay, gravelly silty clay loam.	GC, CL, CH	A-7	0-5	70-85	55-70	50-65	45-60	40-55	20-30
	22-60	Indurated--------	---	---	---	---	---	---	---	---	---
1263*:											
Graley----------	0-7	Very gravelly sandy loam.	GM	A-1	0-5	35-55	30-50	20-30	15-25	20-25	NP-5
	7-14	Very gravelly clay loam, very gravelly clay.	GC	A-2, A-7	0-25	40-55	35-50	30-50	25-40	45-55	20-30
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Loncan----------	0-14	Gravelly loam----	GC, CL	A-6	0-15	65-80	60-75	50-70	35-60	30-35	10-15
	14-31	Very gravelly loam, extremely cobbly loam, very gravelly sandy clay loam.	GC	A-2	10-55	35-60	30-50	25-40	20-35	30-35	10-15
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1263*:											
Bregar	0-4	Extremely gravelly loam.	GM-GC, GC	A-2	10-20	35-50	20-30	15-25	10-20	25-35	5-15
	4-11	Very gravelly sandy clay loam, extremely cobbly clay loam, very gravelly clay loam.	GC	A-2	5-45	40-50	25-35	20-30	10-25	35-45	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1280*:											
Ricert	0-6	Gravelly fine sandy loam.	SM, SM-SC	A-2, A-4	0	65-80	50-75	40-60	25-40	20-30	NP-10
	6-18	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP
Oxcorel	0-5	Gravelly fine sandy loam.	SM-SC, GM-GC	A-2, A-4	0-10	60-85	55-75	40-60	25-40	25-30	5-10
	5-36	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	36-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Whirlo	0-12	Gravelly loam	ML, GM	A-4	0	60-75	55-75	50-70	40-60	---	NP
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
1281*:											
Ricert	0-6	Gravelly silt loam.	SM-SC	A-4	0	75-85	55-75	40-55	35-50	20-30	5-10
	6-18	Loam, clay loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1281*:											
Whirlo	0-12	Fine sandy loam	ML, SM	A-4	0	80-95	75-85	65-80	45-60	20-25	NP-5
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
Pineval	0-5	Gravelly fine sandy loam.	SM-SC	A-2	0	65-85	60-75	50-70	20-35	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP
1283*:											
Ricert	0-6	Very fine sandy loam.	ML, CL-ML	A-4	0-5	90-100	90-100	80-95	55-70	15-25	NP-10
	6-18	Clay loam, loam	CL	A-6, A-7	0	90-100	85-100	80-90	70-80	35-45	15-20
	18-60	Very gravelly sandy loam, very gravelly loamy sand, extremely gravelly loamy sand.	GM, GP-GM	A-1	0-15	30-60	20-50	15-35	5-25	15-20	NP-5
Kingingham	0-7	Sandy loam	SM	A-2	0-5	80-100	75-95	50-70	20-35	15-25	NP-5
	7-22	Gravelly clay loam, gravelly clay, gravelly silty clay loam.	GC, CL, CH	A-7	0-5	70-85	55-70	50-65	45-60	40-55	20-30
	22-60	Indurated	---	---	---	---	---	---	---	---	---
Oxcorel	0-8	Silt loam	ML	A-4	0-5	90-100	90-100	70-85	50-65	20-30	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
1291*:											
Kingingham	0-7	Gravelly very fine sandy loam.	SM	A-2, A-4	0-5	70-85	55-70	50-65	30-50	15-25	NP-5
	7-22	Gravelly clay loam, gravelly clay, gravelly silty clay loam.	GC, CL, CH	A-7	0-5	70-85	55-70	50-65	45-60	40-55	20-30
	22-60	Indurated	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1291*:											
Tenabo	0-6	Very fine sandy loam.	ML	A-4	0	95-100	90-100	85-95	75-85	25-35	NP-10
	6-18	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-95	60-90	50-85	30-40	15-25
	18-40	Indurated	---	---	---	---	---	---	---	---	---
	40-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
Sodhouse	0-3	Gravelly very fine sandy loam.	SM	A-2, A-4	0-10	65-75	55-65	45-65	30-40	15-25	NP-5
	3-17	Fine sandy loam, very fine sandy loam.	ML, SM	A-4	0	80-100	75-90	65-85	35-55	15-25	NP-5
	17-29	Indurated	---	---	---	---	---	---	---	---	---
	29-60	Extremely gravelly sandy loam, very gravelly loamy sand.	GM, GP-GM	A-1	5-20	25-60	15-50	10-40	5-25	---	NP
1292*:											
Kingingham	0-7	Gravelly very fine sandy loam.	SM	A-2, A-4	0-5	70-85	55-70	50-65	30-50	15-25	NP-5
	7-22	Gravelly clay loam, gravelly clay, gravelly silty clay loam.	GC, CL, CH	A-7	0-5	70-85	55-70	50-65	45-60	40-55	20-30
	22-60	Indurated	---	---	---	---	---	---	---	---	---
Golconda	0-10	Gravelly very fine sandy loam.	GM-GC	A-4	0-10	65-75	55-65	45-65	35-50	20-30	5-10
	10-23	Gravelly clay loam, clay loam, silty clay loam.	GC, CL	A-6, A-7	0	60-95	55-90	50-90	40-70	35-45	15-20
	23-36	Cemented	---	---	---	---	---	---	---	---	---
	36-60	Very gravelly loamy coarse sand, very gravelly sandy loam.	GP-GM, GM	A-1	0	30-55	25-50	10-40	5-20	---	NP
Whirlo	0-12	Gravelly very fine sandy loam.	ML, GM	A-4	0	60-75	55-75	50-70	40-60	---	NP
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1293*:											
Kingingham------	0-7	Gravelly very fine sandy loam.	SM	A-2, A-4	0-5	70-85	55-70	50-65	30-50	15-25	NP-5
	7-22	Gravelly clay loam, gravelly clay, gravelly silty clay loam.	GC, CL, CH	A-7	0-5	70-85	55-70	50-65	45-60	40-55	20-30
	22-60	Indurated--------	---	---	---	---	---	---	---	---	---
Oxcorel---------	0-5	Gravelly fine sandy loam.	SM-SC, GM-GC	A-2, A-4	0-10	60-85	55-75	40-60	25-40	25-30	5-10
	5-20	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	20-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
1294*:											
Kingingham------	0-7	Gravelly very fine sandy loam.	SM	A-2, A-4	0-5	70-85	55-70	50-65	30-50	15-25	NP-5
	7-22	Gravelly clay loam, gravelly clay, gravelly silty clay loam.	GC, CL, CH	A-7	0-5	70-85	55-70	50-65	45-60	40-55	20-30
	22-60	Indurated--------	---	---	---	---	---	---	---	---	---
Whirlo----------	0-12	Fine sandy loam	ML, SM	A-4	0	80-95	75-85	65-80	45-60	20-25	NP-5
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
Beoska----------	0-13	Gravelly very fine sandy loam.	SM	A-4	0-10	70-80	55-75	50-70	35-50	15-25	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	---	NP
1342*:											
Doowak, cobbly--	0-6	Cobbly sandy loam	SM, SM-SC	A-2	15-25	80-95	70-85	50-65	20-35	15-25	NP-10
	6-60	Stratified extremely gravelly sand to extremely gravelly loamy sand.	GP	A-1	0-5	30-45	10-25	5-20	0-5	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1342*:											
Doowak----------	0-6	Very gravelly loamy sand.	GM, GP-GM	A-1	5-10	40-55	30-45	15-30	5-15	---	NP
	6-60	Stratified extremely gravelly sand to extremely gravelly loamy sand.	GP	A-1	5-10	30-45	10-25	5-20	0-5	---	NP
Veta----------	0-4	Gravelly sandy loam.	SM	A-1, A-2	0-5	65-80	55-70	45-55	20-35	---	NP
	4-20	Extremely gravelly loam, very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	10-30	40-55	30-50	20-40	15-30	---	NP
	20-60	Stratified extremely gravelly loamy sand to very gravelly loam.	GP-GM, GM	A-1	10-25	30-55	20-50	15-35	5-20	---	NP
1392*:											
Rock outcrop.											
Loncan Variant--	0-12	Gravelly silt loam.	GM, SM, ML	A-4	0-10	65-80	60-75	55-70	40-60	20-25	NP-5
	12-32	Very gravelly loam, extremely gravelly sandy loam.	GM	A-1	10-15	30-45	25-40	20-35	10-25	20-25	NP-5
	32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Glean----------	0-6	Gravelly sandy loam.	SM, GM	A-2, A-4	0-10	55-80	50-75	40-60	25-40	20-30	NP-5
	6-49	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0-25	30-65	25-60	20-50	10-35	20-30	NP-5
	49-53	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1400*:											
Koynik, steep---	0-6	Very cobbly very fine sandy loam.	SM-SC, SM	A-2	45-60	65-80	55-70	45-65	25-35	20-30	NP-10
	6-8	Very gravelly loam, very gravelly very fine sandy loam, very gravelly silt loam.	GM-GC, SM-SC, GC, SC	A-2	0-5	55-70	35-50	30-45	15-30	25-35	5-15
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1400*:											
Koynik	0-6	Very gravelly very fine sandy loam.	GM-GC, SM-SC, GM, SM	A-2, A-1	0-5	55-70	35-50	30-45	15-30	20-30	NP-10
	6-8	Very gravelly loam, very gravelly very fine sandy loam, very gravelly silt loam.	GM-GC, SM-SC, GC, SC	A-2	0-5	55-70	35-50	30-45	15-30	25-35	5-15
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
1410*:											
Bojo	0-4	Fine sandy loam	SM	A-2, A-4	10-25	90-100	75-90	55-70	25-40	15-25	NP-5
	4-10	Sandy clay loam, clay loam.	SC	A-6	0-5	90-100	75-90	55-70	35-50	30-40	10-20
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Stingdorn	0-7	Gravelly loam	SM-SC	A-2, A-4	5-10	70-85	55-70	40-55	30-40	20-30	5-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1411*:											
Bojo	0-4	Gravelly sandy loam.	SM	A-2	25-40	70-85	65-80	50-65	25-35	15-25	NP-5
	4-10	Sandy clay loam, clay loam.	SC	A-6	0-5	90-100	75-90	55-70	35-50	30-40	10-20
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Osoll	0-5	Gravelly loam	GM-GC, CL-ML	A-4	0	60-80	55-75	45-65	35-60	20-25	5-10
	5-12	Very gravelly loam, very gravelly fine sandy loam.	GM-GC	A-2	10-25	30-55	25-50	20-50	10-35	20-25	5-10
	12-35	Indurated	---	---	---	---	---	---	---	---	---
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1412*:											
Bojo	0-5	Very gravelly loam.	GM-GC	A-2	10-25	40-60	35-55	30-50	20-35	20-25	5-10
	5-8	Gravelly clay loam, gravelly loam, clay loam.	GC, CL	A-6, A-7	0-10	70-90	65-85	60-80	45-70	35-45	15-20
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1412*:											
Humdun	0-6	Silt loam	ML	A-4	0	100	100	90-100	70-90	30-40	NP-5
	6-24	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-5
	24-41	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-5
	41-60	Very gravelly loam.	GM	A-2, A-1	5-10	40-55	35-50	25-40	20-30	20-30	NP-5
Boulflat	0-6	Gravelly loam	GM	A-4	0	60-75	50-75	45-65	35-50	20-25	NP-5
	6-23	Gravelly loam, gravelly clay loam, gravelly sandy clay loam.	GC	A-2, A-6	0	60-75	50-75	45-65	25-50	30-35	10-15
	23-32	Cemented	---	---	---	---	---	---	---	---	---
	32-36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1420*:											
Sumine	0-10	Very gravelly loam.	GM-GC	A-2, A-4	10-15	50-65	45-60	40-50	30-40	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan	0-8	Very gravelly loam.	GM-GC	A-2, A-4	10-25	35-65	30-55	25-55	20-40	25-30	5-10
	8-33	Gravelly clay loam, gravelly loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	33-37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cleavage	0-4	Very cobbly loam	GM-GC, GC	A-2, A-4, A-6	30-45	55-75	45-65	40-60	25-50	25-35	5-15
	4-15	Very cobbly clay loam, extremely cobbly sandy clay loam, very gravelly clay loam.	GC	A-2	25-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1421*:											
Sumine	0-10	Very cobbly loam	GM-GC	A-2, A-4	30-55	55-65	50-60	40-55	30-45	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1421*:											
Softscrabble	0-16	Cobbly loam	SM-SC	A-4	25-40	75-90	70-85	55-70	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20
Walti	0-4	Very cobbly loam	CL-ML, ML	A-4	30-40	75-90	65-80	55-70	50-60	20-30	NP-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1422*:											
Sumine	0-10	Very cobbly loam	GM-GC	A-2, A-4	30-55	55-65	50-60	40-55	30-45	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hapgood	0-17	Very gravelly loam.	GM-GC	A-2	5-10	50-60	35-50	30-45	25-35	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
Cleavage	0-4	Extremely gravelly loam.	GM-GC	A-2	0-10	35-45	15-25	10-25	10-20	25-30	5-10
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1423*:											
Sumine	0-10	Very cobbly loam	GM-GC	A-2, A-4	30-55	55-65	50-60	40-55	30-45	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1423*:											
Chen	0-7	Very gravelly loam.	GC	A-2	0-15	50-65	35-50	30-45	25-35	30-35	10-15
	7-15	Very gravelly clay, extremely gravelly clay, very cobbly clay.	GC	A-2, A-7	0-45	35-50	25-45	25-45	20-40	50-60	25-35
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
1425*:											
Sumine	0-10	Very gravelly loam.	GM-GC	A-2, A-4	10-15	50-65	45-60	40-50	30-40	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Loncan	0-14	Very gravelly very fine sandy loam.	GM, GM-GC	A-1, A-2	0-15	40-60	30-45	25-45	15-25	20-30	NP-10
	14-31	Very gravelly loam, extremely cobbly loam, very gravelly sandy clay loam.	GC	A-2	10-55	35-60	30-50	25-40	20-35	30-35	10-15
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1426*:											
Sumine	0-10	Gravelly loam	GM, SM	A-2, A-4	0	55-80	50-75	35-70	25-50	20-25	NP-5
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cleavage	0-4	Extremely gravelly loam.	GM-GC	A-2	0-10	35-45	15-25	10-25	10-20	25-30	5-10
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1426*:											
Loncan----------	0-14	Gravelly loam----	GC, CL	A-6	0-15	65-80	60-75	50-70	35-60	30-35	10-15
	14-31	Very gravelly loam, extremely cobbly loam, very gravelly sandy clay loam.	GC	A-2	10-55	35-60	30-50	25-40	20-35	30-35	10-15
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1427*:											
Sumine----------	0-10	Very gravelly loam.	GM-GC	A-2, A-4	10-15	50-65	45-60	40-50	30-40	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Itca----------	0-9	Very cobbly loam	GM-GC, GC	A-4, A-6	30-50	60-75	50-65	45-60	35-50	25-35	5-15
	9-17	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble----	0-16	Gravelly loam----	SM-SC	A-4	0-5	70-85	55-70	45-60	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Gravelly clay loam.	GC, CL	A-6, A-7	5-10	65-80	55-70	50-65	40-55	35-45	15-20
1428*:											
Sumine----------	0-10	Very gravelly loam.	GM-GC	A-2, A-4	10-15	50-65	45-60	40-50	30-40	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rubble land.											
Cleavage--------	0-4	Extremely gravelly loam.	GM-GC	A-2	0-10	35-45	15-25	10-25	10-20	25-30	5-10
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1429*:											
Sumine----------	0-10	Very gravelly loam.	GM-GC	A-2, A-4	10-15	50-65	45-60	40-50	30-40	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Winada Variant--	0-7	Very gravelly fine sandy loam.	GM-GC	A-2	5-10	45-60	30-45	25-40	10-25	15-25	5-10
	7-24	Very gravelly sandy clay loam.	GC	A-2	5-10	45-60	30-45	25-40	20-35	30-40	10-15
	24-45	Extremely gravelly loam.	GC	A-2	5-15	30-45	15-25	15-25	10-20	25-35	10-15
	45	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Pernty----------	0-3	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0-10	40-60	35-50	20-30	15-25	15-30	NP-10
	3-14	Very cobbly clay loam, very gravelly clay loam, very gravelly loam.	GC	A-6, A-7	10-30	50-60	45-55	40-50	35-45	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1450*:											
Atlow, steep----	0-3	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	3-14	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Atlow----------	0-3	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	3-14	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Stingdorn-------	0-7	Cobbly loam------	SM-SC	A-4	25-40	85-95	75-90	55-80	40-50	20-30	5-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated--------	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1451*:											
Atlow	0-3	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	3-14	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan	0-8	Cobbly loam	SM-SC, CL-ML	A-4	15-30	80-90	70-90	60-85	40-70	20-30	5-10
	8-33	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	33-37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Trunk	0-5	Very cobbly loam	GM-GC, SM-SC, SC, GC	A-4, A-6	30-45	55-80	50-75	45-70	35-50	25-35	5-15
	5-28	Gravelly clay, gravelly clay loam.	CL, GC, CH	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	28-32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1452*:											
Atlow	0-3	Gravelly loam	CL, SC, GC	A-6	0-10	65-90	55-75	45-70	35-60	25-35	10-15
	3-14	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Minat	0-9	Very gravelly loam.	GM-GC, GC	A-2	5-10	45-60	35-50	30-45	20-35	25-35	5-15
	9-27	Very gravelly loam.	GC, GM-GC	A-2	0-10	45-60	30-50	25-45	20-35	25-35	5-15
	27-60	Very gravelly loam, very gravelly fine sandy loam.	GM-GC, GC	A-2	0-10	45-60	30-50	20-45	15-30	25-35	5-15
Old Camp	0-3	Very cobbly loam	GM-GC, GC, SM-SC, SC	A-2, A-4, A-6	35-50	60-75	50-65	45-60	30-45	25-35	5-15
	3-15	Very cobbly clay loam.	GC, SC	A-2, A-6	35-50	60-75	50-65	45-60	30-45	35-40	15-20
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1453*:											
Atlow	0-3	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	3-14	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1453*:											
Colbar----------	0-3	Gravelly loam----	SM-SC, SM, GM, GM-GC	A-4	0-5	65-85	60-75	50-65	35-50	20-30	NP-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	75-90	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
1532*:											
Cleavage--------	0-4	Very gravelly fine sandy loam.	GM, SM	A-1	0-10	50-70	30-50	20-45	15-25	20-25	NP-5
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rubble land.											
Bregar----------	0-4	Very gravelly fine sandy loam.	GM-GC, GM	A-1, A-2	10-20	45-60	40-55	35-50	15-30	15-25	NP-10
	4-11	Very gravelly clay loam, extremely gravelly loam, extremely cobbly sandy clay loam.	GC	A-2	0-40	25-45	20-35	15-30	15-25	35-45	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1542*:											
Linrose---------	0-8	Gravelly loam----	ML, GM	A-4	0-10	65-85	55-75	50-70	35-60	15-25	NP-5
	8-26	Very gravelly loam, very gravelly sandy loam.	GC, GM-GC	A-2	0-15	40-60	30-50	25-45	15-35	25-35	5-15
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cleavage--------	0-4	Very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	0-10	50-70	30-50	25-45	20-40	25-35	5-15
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1542*:											
Pernty	0-3	Very gravelly loam.	GC	A-2	0-10	40-55	35-50	25-35	20-30	30-35	10-15
	3-14	Very cobbly clay loam, very gravelly clay loam, very gravelly loam.	GC	A-6, A-7	10-30	50-60	45-55	40-50	35-45	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1570*:											
Koynik Variant	0-5	Very gravelly sandy loam.	GM	A-1, A-2	25-50	50-65	35-50	25-45	20-35	15-25	NP-5
	5-13	Very gravelly fine sandy loam, very gravelly sandy loam.	GM	A-1	0-25	40-55	35-50	25-45	10-20	15-25	NP-5
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Oxcorel	0-8	Cobbly very fine sandy loam.	SM	A-4	15-30	65-85	60-80	55-75	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0	85-95	80-90	65-85	60-80	40-55	20-30
	34-60	Very gravelly loam, very gravelly sandy loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Whirlo	0-7	Cobbly very fine sandy loam.	SM, ML	A-4	15-25	80-95	75-90	70-80	40-55	15-25	NP-5
	7-13	Gravelly sandy loam, gravelly loam, fine sandy loam.	SM, GM, ML	A-2, A-4	0-10	60-95	55-85	40-60	25-55	15-25	NP-5
	13-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GM	A-1, A-2	5-30	45-60	25-50	20-40	10-30	15-25	NP-5
1600*. Dumps											
1601*. Pits											
1662*:											
Floer	0-12	Gravelly silt loam.	GM, GM-GC, SM, SM-SC	A-4	0-10	55-80	50-75	40-70	35-50	20-30	NP-10
	12-50	Very cobbly clay, extremely stony clay.	GC	A-2		45-55	45-65	35-55	30-40	25-35	55-65	30-40
	50-54	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1662*:											
Slaven	0-5	Loam	CL	A-6	5-10	85-95	75-90	65-80	55-70	25-35	10-15
	5-22	Extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam.	GC	A-2	0	25-35	15-25	15-20	10-20	40-50	15-25
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Roca	0-5	Very gravelly loam.	GC	A-2	0-10	35-60	30-50	25-40	20-35	25-35	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-15	60-75	40-50	30-45	25-35	45-60	25-35
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1670*:											
Wieland	0-8	Loam	CL-ML, ML	A-4	0	90-100	75-100	70-90	50-75	20-30	NP-10
	8-20	Gravelly clay	CH, SC	A-7	0-5	75-95	55-75	50-70	45-65	50-60	25-35
	20-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
Allor	0-12	Very cobbly loam	SM-SC, GM-GC	A-2, A-4	30-50	60-75	45-70	40-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
1671*:											
Wieland	0-8	Loam	CL-ML, ML	A-4	0	90-100	75-100	70-90	50-75	20-30	NP-10
	8-20	Gravelly clay	CH, SC	A-7	0-5	75-95	55-75	50-70	45-65	50-60	25-35
	20-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
Oxcorel	0-5	Gravelly fine sandy loam.	SM-SC, GM-GC	A-2, A-4	0-10	60-85	55-75	40-60	25-40	25-30	5-10
	5-20	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	20-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Allor	0-12	Very cobbly loam	SM-SC, GM-GC	A-2, A-4	30-50	60-75	45-70	40-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1673*:											
Wieland	0-8	Gravelly loam	GC, CL, SC	A-6	0-5	60-85	50-75	45-70	35-60	25-35	10-15
	8-20	Gravelly clay, clay.	CH, SC	A-7	0-5	75-95	55-90	50-80	45-75	50-60	25-35
	20-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
Grassval	0-4	Gravelly loam	SM-SC	A-2, A-4	0-5	65-80	55-70	45-60	30-45	20-25	5-10
	4-13	Gravelly clay loam, gravelly loam.	GC	A-6	0-10	65-75	55-70	50-65	35-50	30-40	15-20
	13	Indurated	---	---	---	---	---	---	---	---	---
Puett	0-4	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	40-50	35-45	20-35	15-20	NP-5
	4-15	Coarse sandy loam, gravelly loam, sandy loam.	SM, ML, GM	A-1, A-2, A-4	0	55-95	50-90	30-80	15-55	---	NP
	15-19	Weathered bedrock	---	---	---	---	---	---	---	---	---
1680 Zineb	0-11	Gravelly loam	SM-SC, CL-ML	A-4	0-10	70-90	55-75	50-70	35-55	20-30	5-10
	11-20	Very gravelly sandy loam.	SM-SC, GM-GC	A-2	0-10	40-65	25-55	20-45	10-25	20-30	5-10
	20-45	Extremely cobbly loamy coarse sand, extremely cobbly coarse sand.	GP, GP-GM	A-1	50-75	20-50	15-45	5-25	0-10	---	NP
	45-60	Loam	ML	A-4	0	95-100	90-100	65-85	55-70	15-25	NP-5
1682*:											
Zineb	0-11	Gravelly loam	SM-SC, CL-ML	A-4	0-10	70-90	55-75	50-70	35-55	20-30	5-10
	11-20	Very gravelly sandy loam.	SM-SC, GM-GC	A-2	0-10	40-65	25-55	20-45	10-25	20-30	5-10
	20-45	Extremely cobbly loamy coarse sand, extremely cobbly coarse sand.	GP, GP-GM	A-1	50-75	20-50	15-45	5-25	0-10	---	NP
	45-60	Loam	ML	A-4	0	95-100	90-100	65-85	55-70	15-25	NP-5
Doowak	0-6	Very gravelly loamy sand.	GM, GP-GM	A-1	5-10	40-55	30-45	15-30	5-15	---	NP
	6-60	Stratified extremely gravelly sand to extremely gravelly loamy sand.	GP	A-1	5-10	30-45	10-25	5-20	0-5	---	NP
Oxcorel	0-8	Gravelly silt loam.	SM-SC, GM-GC	A-4	0-10	60-85	55-75	45-60	35-50	25-30	5-10
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
2060*:											
Oxcorel	0-5	Very fine sandy loam.	ML	A-4	0-5	90-100	90-100	70-85	50-65	20-30	NP-5
	5-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Beoska	0-9	Silt loam	ML	A-4	0	85-95	75-85	70-80	55-70	30-35	NP-5
	9-18	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	18-60	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
Whirlo	0-12	Gravelly loam	ML, GM	A-4	0	60-75	55-75	50-70	40-60	---	NP
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
2061*:											
Oxcorel	0-8	Silt loam	ML	A-4	0-5	90-100	90-100	70-85	50-65	20-30	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Whirlo	0-12	Gravelly loam	ML, GM	A-4	0	60-75	55-75	50-70	40-60	---	NP
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
Dun Glen	0-4	Gravelly loam	SM	A-2, A-4	0	70-80	55-75	45-60	30-50	15-25	NP-5
	4-60	Fine sandy loam, very fine sandy loam.	SM	A-4	0	90-100	85-100	70-85	35-50	15-25	NP-5
2062*:											
Oxcorel	0-5	Gravelly loam	SM-SC, GM-GC	A-4	0-10	60-85	55-75	45-60	35-50	25-30	5-10
	5-36	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	36-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2062*:											
Orovada	0-8	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0	60-80	55-75	45-70	30-50	15-25	NP-5
	8-20	Fine sandy loam, loam, very fine sandy loam.	SM, ML	A-4	0	75-100	75-95	60-85	40-70	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
2064*:											
Oxcorel	0-5	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	5-20	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	20-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Misad	0-7	Gravelly fine sandy loam.	SM, SM-SC	A-1, A-2	0-5	65-80	55-70	45-60	20-35	15-25	NP-10
	7-31	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	31-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP
2065*:											
Oxcorel	0-5	Gravelly loam	SM-SC, GM-GC	A-4	0-10	60-85	55-75	45-60	35-50	25-30	5-10
	5-36	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	36-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Oxcorel, moderately steep	0-3	Gravelly loam	SM-SC, GM-GC	A-4	0-10	60-85	55-75	45-60	35-50	25-30	5-10
	3-30	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	30-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Pineval	0-5	Gravelly loam	CL-ML, GM-GC	A-4	0	65-85	60-75	45-65	40-55	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2066*:											
Oxcorel	0-9	Very fine sandy loam.	ML	A-4	0-5	90-100	90-100	70-85	50-65	20-30	NP-5
	9-36	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	36-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Broyles	0-11	Very fine sandy loam.	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	11-60	Stratified loam to gravelly loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
Dun Glen	0-4	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	50-65	15-25	NP-5
	4-60	Fine sandy loam, very fine sandy loam.	SM	A-4	0	90-100	85-100	70-85	35-50	15-25	NP-5
2067*:											
Oxcorel	0-8	Very fine sandy loam.	ML	A-4	0-5	90-100	90-100	70-85	50-65	20-30	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Colbar	0-3	Cobbly loam	CL-ML	A-4	35-45	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Stingdorn	0-7	Cobbly loam	SM-SC	A-4	25-40	85-95	75-90	55-80	40-50	20-30	5-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2068*:											
Oxcorel	0-5	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	5-36	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	36-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2068*:											
Golconda	0-10	Gravelly very fine sandy loam.	GM-GC	A-4	0-10	65-75	55-65	45-65	35-50	20-30	5-10
	10-23	Gravelly clay loam, clay loam, silty clay loam.	GC, CL	A-6, A-7	0	60-95	55-90	50-90	40-70	35-45	15-20
	23-36	Cemented	---	---	---	---	---	---	---	---	---
	36-60	Very gravelly loamy coarse sand, very gravelly sandy loam.	GP-GM, GM	A-1	0	30-55	25-50	10-40	5-20	---	NP
Whirlo	0-12	Gravelly very fine sandy loam.	ML, GM	A-4	0	60-75	55-75	50-70	40-60	---	NP
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
2069*:											
Oxcorel	0-5	Gravelly silt loam.	SM-SC, GM-GC	A-4	0-10	60-85	55-75	45-60	35-50	25-30	5-10
	5-20	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	20-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Rednik	0-5	Very gravelly sandy loam.	GM	A-1	0-5	45-55	35-50	25-40	15-25	---	NP
	5-16	Very gravelly sandy loam, extremely gravelly loam, very gravelly sandy clay loam.	GC	A-2	5-30	35-60	30-50	20-35	15-30	25-35	10-15
	16-47	Very gravelly sandy loam, very gravelly fine sandy loam.	GM	A-1	5-30	35-60	30-50	15-40	10-25	---	NP
	47-60	Very gravelly sand, extremely gravelly loamy sand.	GP, GP-GM, SP-SM, GM	A-1	5-30	30-60	25-60	15-30	0-15	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
2069*:											
Veta	0-4	Very gravelly fine sandy loam.	GM	A-1	0-5	45-60	35-50	30-45	10-25	---	NP
	4-20	Extremely gravelly loam, very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	10-30	40-55	30-50	20-40	15-30	---	NP
	20-60	Stratified extremely gravelly loamy sand to very gravelly loam.	GP-GM, GM	A-1	10-25	30-55	20-50	15-35	5-20	---	NP
2090*:											
Punchbowl	0-3	Cobbly loam	SM, ML	A-4	25-40	80-90	75-85	60-75	40-55	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Robson	0-10	Very cobbly loam	GM-GC, GC, SM-SC, SC	A-2	30-50	55-75	50-65	30-50	25-35	25-35	5-15
	10-14	Very cobbly clay loam.	GC	A-7	30-45	55-75	50-60	40-60	35-50	40-45	15-20
	14-19	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan	0-8	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	45-60	40-55	30-45	25-30	5-10
	8-33	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	33-37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2091*:											
Punchbowl	0-3	Very gravelly loam.	GM	A-1, A-2	5-10	45-60	35-50	30-45	20-35	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, CL, GC	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Teguro	0-4	Very gravelly loam.	GM	A-1, A-2	0-5	40-55	35-50	30-45	20-35	15-25	NP-5
	4-16	Gravelly clay loam, gravelly loam.	SC	A-2, A-6	0-10	65-80	50-75	35-60	30-50	30-40	15-20
	16-20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2091*:											
Sumine	0-10	Very gravelly loam.	GM-GC	A-2, A-4	10-15	50-65	45-60	40-50	30-40	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2092*:											
Punchbowl	0-3	Gravelly loam	SM	A-2, A-4	5-10	65-85	60-75	45-60	30-45	15-25	NP-5
	3-6	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	6-10	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Belate	0-14	Very gravelly loam.	GM-GC	A-2	5-15	50-65	35-50	30-40	25-35	20-25	5-10
	14-60	Very gravelly clay loam, very gravelly loam.	GC	A-2, A-6	5-10	50-65	35-50	35-45	30-40	25-35	10-15
Reluctan	0-8	Very gravelly loam.	GM-GC	A-2, A-4	10-25	35-65	30-55	25-55	20-40	25-30	5-10
	8-33	Gravelly clay loam, gravelly loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	33-37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2094*:											
Punchbowl	0-3	Very gravelly loam.	GM	A-1, A-2	5-10	45-60	35-50	30-45	20-35	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, CL, GC	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Jung	0-8	Very cobbly loam	GM-GC, SM-SC	A-4	35-50	65-80	50-65	45-60	35-50	25-30	5-10
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2094*:											
Locane----------	0-6	Very gravelly loam.	GM-GC	A-2	5-15	50-65	30-45	25-40	15-30	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2098*:											
Punchbowl-------	0-3	Cobbly loam------	SM, ML	A-4	25-40	80-90	75-85	60-75	40-55	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Clanalpine------	0-12	Very cobbly loam	GM-GC, SM-SC	A-4	25-40	65-75	55-70	45-60	35-50	20-25	5-10
	12-38	Very cobbly loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-35	50-70	35-60	25-50	20-40	30-40	10-20
	38-42	Weathered bedrock	---	---	---	---	---	---	---	---	---
Sumine----------	0-10	Very gravelly loam.	GM-GC	A-2, A-4	10-15	50-65	45-60	40-50	30-40	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2099*:											
Punchbowl-------	0-3	Very gravelly loam.	GM	A-1, A-2	5-10	45-60	35-50	30-45	20-35	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, CL, GC	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Roca------------	0-5	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
2100*:											
Grassval--------	0-4	Gravelly loam----	SM-SC	A-2, A-4	0-5	65-80	55-70	45-60	30-45	20-25	5-10
	4-13	Gravelly clay loam, gravelly loam.	GC	A-6	0-10	65-75	55-70	50-65	35-50	30-40	15-20
	13	Indurated--------	---	---	---	---	---	---	---	---	---
Grina----------	0-3	Very gravelly loam.	GM-GC, GC	A-2	0-5	45-60	30-45	25-40	15-30	25-35	5-15
	3-14	Loam, silt loam, silty clay loam.	CL	A-6, A-7	0	90-100	80-100	75-95	60-85	30-45	10-20
	14-18	Weathered bedrock	---	---	---	---	---	---	---	---	---
Unsel Variant---	0-2	Very gravelly loam.	GM-GC	A-2	10-15	45-60	35-50	30-45	20-35	20-30	5-10
	2-15	Gravelly clay loam.	SC	A-6, A-7	0	70-80	55-70	45-60	35-50	35-45	15-20
	15-22	Gravelly loam----	SM-SC, SC	A-4, A-6	0	70-85	55-70	45-60	35-50	25-35	5-15
	22	Weathered bedrock	---	---	---	---	---	---	---	---	---
2104*:											
Grassval--------	0-4	Very gravelly sandy loam.	GM-GC	A-2	5-10	45-60	35-50	25-45	15-30	20-25	5-10
	4-13	Gravelly clay loam, gravelly loam.	GC	A-6	0-10	65-75	55-70	50-65	35-50	30-40	15-20
	13	Indurated--------	---	---	---	---	---	---	---	---	---
Zineb----------	0-6	Gravelly very fine sandy loam.	SM-SC, CL-ML	A-4	0-10	70-90	55-75	50-70	35-55	20-30	5-10
	6-13	Gravelly loam, gravelly very fine sandy loam.	SM-SC, CL-ML	A-4	0-10	70-90	55-75	50-70	35-55	20-30	5-10
	13-19	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-10	30-60	25-55	20-45	10-25	15-25	NP-5
	19-27	Extremely cobbly sandy loam.	GP-GM, GM	A-1	50-75	20-50	15-45	10-30	5-20	15-25	NP-5
	27-60	Extremely cobbly coarse sand, extremely cobbly loamy coarse sand.	GP, GP-GM	A-1	50-75	20-50	15-45	5-25	0-10	---	NP
Izod----------	0-4	Cobbly loam------	SM-SC, SM, CL-ML, ML	A-4	15-30	80-95	70-90	55-75	45-65	25-35	5-10
	4-10	Very gravelly loam, extremely gravelly loam.	GM-GC, GM	A-2	0-25	20-55	15-50	15-45	10-35	25-35	5-10
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2521---------- Stingdorn	0-7	Very cobbly loam	SM-SC	A-2, A-4	30-50	70-85	55-70	40-55	30-40	20-30	5-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated--------	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2522*:											
Stingdorn	0-7	Cobbly loam	SM-SC	A-4	25-40	85-95	75-90	55-80	40-50	20-30	5-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Stingdorn, steep	0-7	Extremely cobbly loam.	GM, GM-GC	A-1, A-2	50-60	45-60	35-50	30-45	15-30	15-25	NP-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Colbar	0-3	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2530*:											
Perwick	0-3	Very gravelly loam.	SM-SC	A-2	0	70-80	40-50	35-45	25-35	20-30	5-10
	3-16	Gravelly loam, gravelly silt loam, gravelly sandy loam.	GM-GC, SM-SC	A-4	0	70-80	50-75	40-60	35-50	20-30	5-10
	16-26	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	95-100	80-90	60-75	30-60	20-25	NP-5
	26	Weathered bedrock	---	---	---	---	---	---	---	---	---
Puett	0-3	Gravelly loam	GM-GC, SM-SC	A-4	0-5	65-85	55-75	50-70	35-50	20-30	5-10
	3-10	Coarse sandy loam, gravelly loam, sandy loam.	SM, ML, GM	A-1, A-2, A-4	0	55-95	50-90	30-80	15-55	---	NP
	10-14	Weathered bedrock	---	---	---	---	---	---	---	---	---
Tulase	0-6	Silt loam	CL-ML, ML	A-4	0	100	100	100	90-100	15-25	NP-10
	6-60	Very fine sandy loam, silt loam.	CL-ML, ML	A-4	0	100	100	95-100	70-85	15-25	NP-10
2540*:											
Buffaran	0-4	Cobbly loam	SC, CL	A-6	15-30	75-90	75-85	50-75	40-60	25-35	10-15
	4-15	Gravelly clay loam, gravelly clay, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	15-60	Indurated	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
2540*:											
Wieland	0-8	Gravelly loam	GC, CL, SC	A-6	0-5	60-85	50-75	45-70	35-60	25-35	10-15
	8-20	Gravelly clay, clay.	CH, SC	A-7	0-5	75-95	55-90	50-80	45-75	50-60	25-35
	20-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
2541*:											
Buffaran	0-4	Gravelly loam	SC, CL	A-6	5-15	75-90	70-80	50-75	40-60	25-35	10-15
	4-15	Gravelly clay loam, gravelly clay, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	15-60	Indurated	---	---	---	---	---	---	---	---	---
Zoesta	0-7	Cobbly loam	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15
2550*:											
Laped	0-3	Gravelly loam	GM-GC, SM-SC	A-4	0-5	65-80	55-70	50-65	35-50	20-30	5-10
	3-22	Gravelly clay loam.	GC, SC	A-6, A-7	0-10	60-80	55-75	45-60	35-50	35-45	15-20
	22-26	Indurated	---	---	---	---	---	---	---	---	---
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Old Camp	0-2	Gravelly loam	SM-SC	A-4	0-5	70-85	60-75	50-65	35-50	25-30	5-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Colbar	0-6	Gravelly loam	SM-SC, SM, GM, GM-GC	A-4	0-5	65-85	60-75	50-65	35-50	20-30	NP-10
	6-16	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	75-90	70-85	60-80	50-65	30-40	10-20
	16-21	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2551*:											
Laped	0-6	Gravelly loam	GM-GC, SM-SC	A-4	0-5	65-80	55-70	50-65	35-50	20-30	5-10
	6-18	Gravelly clay loam.	GC, SC	A-6, A-7	0-10	60-80	55-75	45-60	35-50	35-45	15-20
	18-23	Indurated	---	---	---	---	---	---	---	---	---
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
2551*:											
Colbar----------	0-3	Cobbly loam------	CL-ML	A-4	35-45	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Osoll----------	0-5	Gravelly loam----	GM-GC, CL-ML	A-4	0	60-80	55-75	45-65	35-60	20-25	5-10
	5-12	Very gravelly loam, very gravelly fine sandy loam.	GM-GC	A-2	10-25	30-55	25-50	20-50	10-35	20-25	5-10
	12-35	Indurated--------	---	---	---	---	---	---	---	---	---
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2552*:											
Laped----------	0-6	Gravelly very fine sandy loam.	SM-SC	A-2, A-4	0-5	65-80	55-70	45-60	30-45	20-30	5-10
	6-18	Gravelly clay loam.	GC, SC	A-6, A-7	0-10	60-80	55-75	45-60	35-50	35-45	15-20
	18-23	Indurated--------	---	---	---	---	---	---	---	---	---
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Old Camp--------	0-2	Very gravelly fine sandy loam.	GM, GM-GC	A-1, A-2	5-10	45-60	35-50	25-40	10-25	15-25	NP-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Puett----------	0-4	Fine sandy loam	SM	A-4	0	90-100	85-95	60-80	35-50	---	NP
	4-15	Coarse sandy loam, fine sandy loam, sandy loam.	SM, ML	A-1, A-2, A-4	0	80-100	75-95	40-80	15-55	---	NP
	15-19	Weathered bedrock	---	---	---	---	---	---	---	---	---
2553*:											
Laped----------	0-6	Cobbly loam------	CL-ML	A-4	15-25	80-95	75-90	65-80	50-65	20-30	5-10
	6-18	Gravelly clay loam.	GC, SC	A-6, A-7	0-5	60-80	55-70	45-60	35-50	35-45	15-20
	18-23	Indurated--------	---	---	---	---	---	---	---	---	---
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Stingdorn-------	0-7	Cobbly loam------	SM-SC	A-4	25-40	85-95	75-90	55-80	40-50	20-30	5-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated--------	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2553*:											
Colbar----------	0-3	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2555*:											
Laped----------	0-6	Very cobbly loam	SM-SC, GM-GC	A-4	30-50	65-80	50-70	45-60	35-50	20-30	5-10
	6-18	Gravelly clay loam.	GC, SC	A-6, A-7	0-5	60-80	55-70	45-60	35-50	35-45	15-20
	18-23	Indurated--------	---	---	---	---	---	---	---	---	---
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Colbar----------	0-3	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2561*:											
Puett----------	0-4	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	40-50	35-45	20-35	15-20	NP-5
	4-15	Coarse sandy loam, gravelly loam, sandy loam.	SM, ML, GM	A-1, A-2, A-4	0	55-95	50-90	30-80	15-55	---	NP
	15-19	Weathered bedrock	---	---	---	---	---	---	---	---	---
Genaw----------	0-6	Gravelly loam----	GM-GC, SM-SC	A-4	0-5	65-80	55-75	45-65	35-50	20-30	5-10
	6-11	Gravelly loam, gravelly clay loam.	GC, SC	A-6	0-5	60-80	55-75	45-65	35-50	25-35	10-15
	11-16	Very gravelly loam.	GM-GC	A-2	0-5	45-55	35-50	25-45	20-35	25-30	5-10
	16	Weathered bedrock	---	---	---	---	---	---	---	---	---
Orovada----------	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2571*:											
Colbar, steep---	0-3	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burrita---------	0-3	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	3-18	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	18-22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Colbar----------	0-3	Gravelly loam----	SM-SC, SM, GM, GM-GC	A-4	0-5	65-85	60-75	50-65	35-50	20-30	NP-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	75-90	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2573*:											
Colbar----------	0-3	Cobbly loam------	CL-ML	A-4	35-45	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Midraw----------	0-6	Very cobbly loam	CL, GC	A-6, A-2	30-40	50-75	40-70	35-60	30-55	25-35	10-15
	6-16	Gravelly clay, gravelly clay loam.	GC, CL	A-7	0-10	65-75	55-70	50-65	45-60	40-50	15-25
	16-31	Indurated--------	---	---	---	---	---	---	---	---	---
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2575*:											
Colbar----------	0-3	Gravelly loam----	SM-SC, SM, GM, GM-GC	A-4	0-5	65-85	60-75	50-65	35-50	20-30	NP-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	75-90	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2575*:											
Perwick	0-6	Very gravelly loam.	SM-SC	A-2	0	70-80	40-50	35-45	25-35	20-30	5-10
	6-27	Gravelly loam, gravelly silt loam, gravelly sandy loam.	GM-GC, SM-SC	A-4	0	70-80	50-75	40-60	35-50	20-30	5-10
	27-31	Weathered bedrock	---	---	---	---	---	---	---	---	---
Settlemeyer	0-16	Loam	CL, CL-ML	A-4, A-6	0	100	100	80-95	60-75	25-35	5-15
	16-40	Silt loam, silty clay loam.	CL	A-6, A-7	0	95-100	90-100	85-90	60-85	35-45	15-20
	40-60	Fine sandy loam	CL-ML, SM-SC	A-4	0	95-100	90-100	80-90	40-60	20-30	5-10
2591*:											
Osoil Variant	0-10	Gravelly loam	SM-SC	A-2, A-4	0-5	70-80	60-75	50-70	30-45	25-30	5-10
	10-26	Very gravelly loam.	GM-GC	A-2	5-10	45-60	35-50	30-45	20-35	25-30	5-10
	26-60	Indurated	---	---	---	---	---	---	---	---	---
Oxcorel	0-5	Gravelly loam	SM-SC, GM-GC	A-4	0-10	60-85	55-75	45-60	35-50	25-30	5-10
	5-36	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	36-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
2600*:											
Grina	0-5	Gravelly loam	SM-SC, SC	A-4, A-6	0-5	70-85	55-70	45-60	35-50	25-35	5-15
	5-14	Loam, silt loam, silty clay loam.	CL	A-6, A-7	0	90-100	80-100	75-95	60-85	30-45	10-20
	14	Weathered bedrock	---	---	---	---	---	---	---	---	---
Caniwe	0-17	Silt loam	ML	A-4	0	100	100	95-100	85-95	25-35	NP-5
	17-60	Stratified silt loam to silty clay loam.	ML	A-4, A-7, A-6	0	100	100	95-100	85-95	30-50	5-15
Handy	0-4	Loam	CL-ML, CL, ML	A-4, A-6	0-5	90-100	85-100	70-85	60-75	20-35	NP-15
	4-30	Gravelly clay, clay.	CH, CL	A-7	0-5	70-100	60-100	60-75	50-70	45-55	30-35
	30-60	Stratified gravelly loam to very gravelly loamy sand.	GM	A-1, A-2	0-5	35-65	30-60	20-55	10-35	15-25	NP-5
2602*:											
Grina	0-5	Gravelly loam	SM-SC, SC	A-4, A-6	0-5	70-85	55-70	45-60	35-50	25-35	5-15
	5-15	Loam, silt loam, silty clay loam.	CL	A-6, A-7	0	90-100	80-100	75-95	60-85	30-45	10-20
	15-19	Weathered bedrock	---	---	---	---	---	---	---	---	---
Grina, eroded	0-3	Very gravelly loam.	GM-GC, GC	A-2	0-5	45-60	30-45	25-40	15-30	25-35	5-15
	3-14	Loam, silt loam, silty clay loam.	CL	A-6, A-7	0	90-100	80-100	75-95	60-85	30-45	10-20
	14-18	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2602*:											
Caniwe	0-17	Silt loam	ML	A-4	0	100	100	95-100	85-95	25-35	NP-5
	17-60	Stratified silt loam to silty clay loam.	ML	A-4, A-7, A-6	0	100	100	95-100	85-95	30-50	5-15
2620*:											
Handy	0-9	Loam	CL-ML, CL, ML	A-4, A-6	0-5	90-100	85-100	70-85	60-75	20-35	NP-15
	9-38	Gravelly clay, clay.	CH, CL	A-7	0-5	70-100	60-100	60-75	50-70	45-55	30-35
	38-60	Stratified gravelly loam to very gravelly loamy sand.	GM	A-1, A-2	0-5	35-65	30-60	20-55	10-35	15-25	NP-5
Caniwe	0-17	Silt loam	ML	A-4	0	100	100	95-100	85-95	25-35	NP-5
	17-60	Stratified silt loam to silty clay loam.	ML	A-4, A-7, A-6	0	100	100	95-100	85-95	30-50	5-15
Zoesta	0-7	Loam	CL-ML, ML	A-4	0-5	85-95	80-90	65-80	50-65	20-30	NP-10
	7-23	Clay	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15
2621*:											
Handy, gravelly-	0-4	Gravelly loam	SC	A-2, A-6	0-10	65-75	55-65	40-50	30-40	30-35	10-15
	4-30	Gravelly clay, clay.	CH, CL	A-7	0-10	70-100	60-100	60-75	50-70	45-55	30-35
	30-60	Stratified gravelly loam to very gravelly loamy sand.	GM	A-1, A-2	0-10	35-65	30-60	20-55	10-35	15-25	NP-5
Handy	0-4	Loam	CL-ML, CL, ML	A-4, A-6	0-5	90-100	85-100	70-85	60-75	20-35	NP-15
	4-30	Gravelly clay, clay.	CH, CL	A-7	0-5	70-100	60-100	60-75	50-70	45-55	30-35
	30-60	Stratified gravelly loam to very gravelly loamy sand.	GM	A-1, A-2	0-5	35-65	30-60	20-55	10-35	15-25	NP-5
Zoesta	0-7	Cobbly loam	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
2631*:											
Midraw	0-2	Very gravelly loam.	GC	A-2	0-10	35-55	25-50	20-40	15-35	25-35	10-15
	2-19	Gravelly clay loam, gravelly clay.	GC, CL	A-7	0-10	60-80	55-75	50-70	40-60	40-50	20-25
	19-25	Indurated	---	---	---	---	---	---	---	---	---
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Minat	0-9	Gravelly loam	GM-GC, GC	A-4, A-6	5-10	65-75	55-70	50-65	35-50	25-35	5-15
	9-27	Very gravelly loam.	GC, GM-GC	A-2	0-10	45-60	30-50	25-45	20-35	25-35	5-15
	27-60	Very gravelly loam, very gravelly fine sandy loam.	GM-GC, GC	A-2	0-10	45-60	30-50	20-45	15-30	25-35	5-15
Pineval	0-5	Gravelly fine sandy loam.	SM-SC	A-2	0	65-85	60-75	50-70	20-35	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0-25	30-60	20-50	15-40	5-20	---	NP
2640*:											
Rasille	0-6	Silt loam	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	6-15	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	15-41	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	41-60	Stratified fine sandy loam to very gravelly coarse sand.	SM, GM	A-1	0	55-80	50-75	15-35	10-20	---	NP
Kelk	0-14	Silt loam	CL-ML, CL	A-4, A-6	0	95-100	95-100	95-100	75-90	25-35	5-15
	14-51	Silt loam	CL-ML, CL	A-4, A-6	0	95-100	95-100	95-100	85-95	25-35	5-15
	51-60	Silt loam	CL-ML, CL	A-4, A-6	0	95-100	90-100	90-100	80-95	25-35	5-15
2652*:											
Malpais	0-3	Very gravelly fine sandy loam.	GM	A-1	0-5	40-55	30-45	25-40	15-25	20-30	NP-5
	3-15	Very gravelly loam, very gravelly sandy loam, very cobbly sandy loam.	GM	A-1, A-2	5-35	50-60	35-50	30-45	20-35	20-25	NP-5
	15-60	Extremely cobbly loam, very cobbly loam, extremely cobbly sandy loam.	GM	A-1, A-2	40-50	40-55	35-50	25-35	20-30	20-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2652*:											
Stingdorn-------	0-7	Extremely cobbly loam.	GM, GM-GC	A-1, A-2	50-60	45-60	35-50	30-45	15-30	15-25	NP-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated--------	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2670*:											
Zoesta Variant--	0-8	Gravelly loam----	GM, SM	A-4	0-5	65-80	55-70	50-65	35-50	20-30	NP-5
	8-27	Clay-------------	CH	A-7	0	85-95	85-95	80-95	70-85	60-70	30-40
	27-36	Clay loam, clay	CL, CH	A-7	0	85-95	85-95	80-90	65-80	45-55	20-30
	36-60	Gravelly loam, gravelly sandy loam.	SM-SC	A-2, A-4	0-5	65-80	55-70	40-55	25-40	25-30	5-10
Jung------------	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
McVegas---------	0-5	Very cobbly loam	SM	A-4	35-45	70-85	55-70	50-65	35-50	15-25	NP-5
	5-19	Very cobbly silty clay, very cobbly clay, very cobbly clay loam.	CL, CH, GC	A-7	30-40	70-85	65-75	50-70	45-70	40-55	20-30
	19-22	Cemented---------	---	---	---	---	---	---	---	---	---
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2681*:											
Tessfive---------	0-6	Gravelly loam----	SM-SC, GM-GC	A-4	0-5	65-80	55-70	45-60	35-50	20-30	5-10
	6-16	Gravelly loam, gravelly sandy loam.	SM-SC, GM-GC	A-4, A-1, A-2	0-5	55-80	50-70	35-60	20-50	20-30	5-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Puett------------	0-4	Gravelly sandy loam.	SM-SC	A-2	0-5	70-80	60-70	45-55	20-35	20-30	5-10
	4-15	Coarse sandy loam, gravelly loam, sandy loam.	SM, ML, GM	A-1, A-2, A-4	0	55-95	50-90	30-80	15-55	---	NP
	15-19	Weathered bedrock	---	---	---	---	---	---	---	---	---
Grina------------	0-3	Gravelly loam----	SM-SC, SC	A-4, A-6	0-5	70-85	55-70	45-60	35-50	25-35	5-15
	3-14	Loam, silt loam, silty clay loam.	CL	A-6, A-7	0	90-100	80-100	75-95	60-85	30-45	10-20
	14-18	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2711*:											
Burrita	0-3	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	3-18	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	18-22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burnborough	0-16	Very gravelly loam.	SC, SM-SC	A-2	5-10	65-75	40-55	30-45	25-35	20-35	5-15
	16-60	Very gravelly loam, very gravelly clay loam.	GC, SC	A-2	15-25	55-65	35-60	20-35	15-30	25-40	10-20
2712*:											
Burrita	0-3	Gravelly loam	GM-GC, SM-SC	A-4	0-10	60-80	55-75	50-65	35-50	15-25	5-10
	3-18	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC	A-2, A-7	10-55	40-65	30-55	25-50	20-45	40-55	20-30
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Alley	0-3	Loam	CL-ML, ML	A-4	0-5	95-100	85-95	75-95	50-70	20-30	NP-10
	3-16	Gravelly clay loam, gravelly loam.	SC, GC	A-6	0-10	65-80	55-75	50-65	35-50	30-40	10-20
	16-40	Gravelly loam, gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-2	0-10	60-70	50-60	35-45	25-35	20-30	NP-10
	40-60	Very gravelly sandy loam, very gravelly loamy sand.	GM	A-1	0-10	30-55	25-50	15-40	10-25	---	NP
Newpass	0-5	Loam	ML, CL-ML, CL	A-4, A-6	0	80-100	75-100	60-80	50-70	20-35	NP-15
	5-17	Clay, silty clay	CH	A-7	0-5	85-100	80-95	75-90	70-85	50-65	25-35
	17-24	Very cobbly silty clay, gravelly clay, very gravelly clay.	CH	A-7	15-60	70-85	55-75	50-70	50-65	50-65	25-35
	24-34	Cemented	---	---	---	---	---	---	---	---	---
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2721*:											
Burnborough	0-16	Very gravelly loam.	SC, SM-SC	A-2	5-10	65-75	40-55	30-45	25-35	20-35	5-15
	16-60	Very gravelly loam, very gravelly clay loam.	GC, SC	A-2	15-25	55-65	35-60	20-35	15-30	25-40	10-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2721*:											
Sumine	0-10	Very cobbly loam	GM-GC	A-2, A-4	30-55	55-65	50-60	40-55	30-45	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burrita	0-3	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	3-18	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	18-22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2760*:											
Ginex	0-3	Very gravelly sandy loam.	GM-GC	A-2	0	45-60	30-50	20-40	10-25	15-25	5-10
	3-18	Very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	45-60	30-50	25-45	20-35	25-35	10-15
	18-22	Weathered bedrock	---	---	---	---	---	---	---	---	---
Burrita	0-7	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	7-14	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burrita, south aspect	0-7	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	7-14	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2771*:											
Kram	0-3	Very gravelly very fine sandy loam.	GM	A-1, A-2	10-15	50-60	35-50	30-50	20-30	15-25	NP-5
	3-10	Very gravelly loam, very gravelly very fine sandy loam, extremely gravelly loam.	GM	A-1, A-2	0-15	25-60	15-55	15-45	10-30	15-25	NP-5
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2771*:											
Hopeka	0-8	Very gravelly loam.	GC	A-2	0-15	40-55	25-50	25-45	20-35	25-35	10-15
	8-12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
2783*:											
Desatoya, steep	0-3	Very gravelly sandy loam.	GM-GC, SM-SC	A-2	0-10	50-70	35-50	25-40	15-30	20-30	5-10
	3-14	Gravelly clay loam, gravelly clay.	GC	A-7	0-5	65-75	55-70	50-60	40-50	40-50	20-30
	14-60	Stratified extremely gravelly sandy loam to very gravelly loamy sand.	GM	A-1	25-35	35-50	25-45	15-30	10-15	15-25	NP-5
Spike	0-2	Very gravelly sandy loam.	GM-GC	A-2	0-5	50-65	35-50	25-40	15-30	20-30	5-10
	2-6	Very gravelly clay, very gravelly clay loam, very gravelly sandy clay.	GC	A-2	5-15	50-65	35-50	30-45	20-35	45-55	25-30
	6-60	Extremely gravelly sandy clay loam, extremely gravelly clay loam, very gravelly loam.	GP-GC, GC	A-2	10-25	30-50	10-35	5-30	5-20	25-35	10-15
Desatoya	0-3	Gravelly sandy loam.	SM-SC	A-2, A-4	0-10	65-80	50-75	45-60	25-40	20-30	5-10
	3-14	Gravelly clay loam, gravelly clay.	GC	A-7	0-5	65-75	55-70	50-60	40-50	40-50	20-30
	14-60	Stratified extremely gravelly sandy loam to very gravelly loamy sand.	GM	A-1	25-35	35-50	25-45	15-30	10-15	15-25	NP-5
2790*:											
Old Camp	0-5	Very gravelly loam.	GM, GM-GC	A-1, A-2	0-15	50-60	35-45	30-40	20-30	15-25	NP-10
	5-11	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
2790*:											
Minat	0-9	Very gravelly loam.	GM-GC, GC	A-2	5-10	45-60	35-50	30-45	20-35	25-35	5-15
	9-27	Very gravelly loam.	GC, GM-GC	A-2	0-10	45-60	30-50	25-45	20-35	25-35	5-15
	27-60	Very gravelly loam, very gravelly fine sandy loam.	GM-GC, GC	A-2	0-10	45-60	30-50	20-45	15-30	25-35	5-15
Osoll	0-5	Gravelly loam	GM-GC, CL-ML	A-4	0	60-80	55-75	45-65	35-60	20-25	5-10
	5-12	Very gravelly loam, very gravelly fine sandy loam.	GM-GC	A-2	10-25	30-55	25-50	20-50	10-35	20-25	5-10
	12-35	Indurated	---	---	---	---	---	---	---	---	---
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2791*:											
Old Camp	0-2	Very cobbly loam	GM, GM-GC, SM, SM-SC	A-2, A-4	25-55	60-70	55-65	45-55	30-40	15-25	NP-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Colbar	0-3	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
2793*:											
Old Camp	0-2	Very cobbly loam	GM, GM-GC, SM, SM-SC	A-2, A-4	25-55	60-70	55-65	45-55	30-40	15-25	NP-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Laped	0-6	Very cobbly loam	SM-SC, GM-GC	A-4	30-50	65-80	50-70	45-60	35-50	20-30	5-10
	6-18	Gravelly clay loam.	GC, SC	A-6, A-7	0-5	60-80	55-70	45-60	35-50	35-45	15-20
	18-23	Indurated	---	---	---	---	---	---	---	---	---
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
2794*:											
Old Camp	0-2	Gravelly loam	SM-SC	A-4	0-5	70-85	60-75	50-65	35-50	25-30	5-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Kram Variant	0-3	Very gravelly loam.	GC	A-2, A-6	5-10	45-60	35-50	30-45	25-40	25-35	10-15
	3-11	Extremely gravelly loam.	GC	A-2	5-10	35-50	20-30	15-25	10-20	25-35	10-15
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
2796*:											
Old Camp	0-2	Gravelly loam	SM-SC	A-4	0-5	70-85	60-75	50-65	35-50	25-30	5-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Osoll	0-5	Gravelly loam	GM-GC, CL-ML	A-4	0	60-80	55-75	45-65	35-60	20-25	5-10
	5-12	Very gravelly loam, very gravelly fine sandy loam.	GM-GC	A-2	10-25	30-55	25-50	20-50	10-35	20-25	5-10
	12-35	Indurated	---	---	---	---	---	---	---	---	---
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Colbar	0-3	Gravelly loam	SM-SC, SM, GM, GM-GC	A-4	0-5	65-85	60-75	50-65	35-50	20-30	NP-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	75-90	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2797*:											
Old Camp, steep-	0-2	Gravelly loam	SM-SC	A-4	0-5	70-85	60-75	50-65	35-50	25-30	5-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
2797*:											
Colbar----------	0-3	Cobbly loam------	CL-ML	A-4	35-45	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Old Camp--------	0-2	Very cobbly loam	GM, GM-GC, SM, SM-SC	A-2, A-4	25-55	60-70	55-65	45-55	30-40	15-25	NP-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2798*:											
Old Camp--------	0-2	Gravelly loam----	SM-SC	A-4	0-5	70-85	60-75	50-65	35-50	25-30	5-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Atlow----------	0-3	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	3-14	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Osoll----------	0-5	Very gravelly loam.	GM-GC	A-4, A-2	0	30-60	25-50	20-50	15-40	20-25	5-10
	5-12	Very gravelly loam, very gravelly fine sandy loam.	GM-GC	A-2	10-25	30-55	25-50	20-50	10-35	20-25	5-10
	12-35	Indurated--------	---	---	---	---	---	---	---	---	---
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2800*:											
Old Camp--------	0-6	Extremely gravelly loam.	GM-GC	A-2	10-20	25-40	15-25	10-25	10-20	15-25	5-10
	6-16	Very cobbly clay loam, extremely stony sandy clay loam, very stony loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
2800*:											
Walti	0-4	Very cobbly loam	CL-ML, ML	A-4	30-40	75-90	65-80	55-70	50-60	20-30	NP-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble	0-16	Very cobbly loam	GM-GC, SM-SC	A-4	40-50	65-80	60-75	50-65	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20
2801*:											
Old Camp	0-3	Very cobbly loam	GM-GC, GC, SM-SC, SC	A-2, A-4, A-6	35-50	60-75	50-65	45-60	30-45	25-35	5-15
	3-15	Very cobbly clay loam.	GC, SC	A-2, A-6	35-50	60-75	50-65	45-60	30-45	35-40	15-20
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Colbar	0-3	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2802*:											
Old Camp	0-3	Extremely cobbly loam.	GM-GC, GC	A-2	50-60	50-60	35-50	30-45	20-35	25-35	5-15
	3-15	Very cobbly clay loam.	GC, SC	A-2, A-6	35-50	60-75	50-65	45-60	30-45	35-40	15-20
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Colbar	0-3	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3071*:											
Allor	0-12	Gravelly loam	SM-SC	A-2, A-4	5-10	70-80	55-75	45-65	30-45	20-30	5-10
	12-34	Gravelly clay loam, gravelly sandy clay loam.	SC	A-6, A-7	0-10	70-85	55-75	45-65	35-50	35-45	15-20
	34-60	Gravelly loamy sand, very gravelly loamy sand.	SM	A-1	0-10	55-75	45-65	30-50	10-20	---	NP
Wieland	0-8	Gravelly loam	GC, CL, SC	A-6	0-5	60-85	50-75	45-70	35-60	25-35	10-15
	8-20	Gravelly clay, clay.	CH, SC	A-7	0-5	75-95	55-90	50-80	45-75	50-60	25-35
	20-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
3111*:											
Ninemile	0-9	Extremely cobbly loam.	GM-GC	A-4, A-2	45-65	30-50	30-45	25-45	20-40	25-30	5-10
	9-19	Clay, gravelly clay.	CH	A-7	0-15	70-100	65-100	60-90	50-80	55-65	30-35
	19-23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Zoesta	0-7	Cobbly loam	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15
Itca	0-9	Extremely stony loam.	GM-GC, GC	A-4, A-6	30-50	60-75	50-65	45-60	35-50	25-35	5-15
	9-17	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3121*:											
Walti	0-4	Extremely cobbly loam.	GM-GC	A-2	50-60	40-55	25-40	20-35	15-30	20-30	5-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Gravelly clay, clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble	0-16	Very cobbly loam	GM-GC, SM-SC	A-4	40-50	65-80	60-75	50-65	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3121*:											
Bucan	0-5	Very cobbly loam	GC, CL	A-6	25-50	55-70	50-65	45-60	35-55	30-35	10-15
	5-30	Clay	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	30-52	Cobbly clay, gravelly clay loam, gravelly clay.	CL	A-7	10-30	75-90	70-85	60-70	50-60	40-50	25-35
	52-56	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3122*:											
Walti	0-4	Gravelly loam	SM-SC, GM-GC, CL-ML	A-4	5-10	65-80	55-75	40-60	35-55	20-30	5-10
	4-10	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	10-30	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sumine	0-10	Cobbly loam	CL-ML	A-4	20-30	80-90	75-85	65-75	50-65	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble	0-16	Cobbly loam	SM-SC	A-4	25-40	75-90	70-85	55-70	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20
3127*:											
Walti	0-5	Cobbly loam	CL-ML	A-4	25-40	70-85	65-80	55-70	50-60	20-30	5-10
	5-9	Clay loam, gravelly clay loam.	CL	A-6	0-10	90-100	65-90	60-80	50-65	35-40	15-20
	9-22	Clay, gravelly clay.	CH, MH	A-7	0-10	90-100	65-90	60-80	50-75	55-65	25-35
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cleavage	0-4	Extremely gravelly loam.	GM-GC	A-2	0-10	35-45	15-25	10-25	10-20	25-30	5-10
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3127*:											
Softscrabble----	0-9	Gravelly loam----	SM-SC	A-4	0-5	70-85	55-70	45-60	35-50	20-30	5-10
	9-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Gravelly clay loam.	GC, CL	A-6, A-7	5-10	65-80	55-70	50-65	40-55	35-45	15-20
3134*:											
Itca----------	0-9	Extremely cobbly fine sandy loam.	SM-SC	A-2	55-65	60-75	45-55	35-50	20-35	20-30	5-10
	9-17	Very gravelly clay, very gravelly clay loam.	GC	A-7, A-2	10-20	50-65	40-50	35-45	25-40	40-50	15-25
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Clanalpine------	0-12	Extremely cobbly loam.	GM-GC	A-2	45-55	35-45	25-35	20-30	15-25	20-25	5-10
	12-38	Very cobbly loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6	15-35	50-70	35-60	25-50	20-40	30-40	10-20
	38-42	Weathered bedrock	---	---	---	---	---	---	---	---	---
Sumine----------	0-10	Very gravelly loam.	GM-GC	A-2, A-4	10-15	50-65	45-60	40-50	30-40	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3150*:											
Robson----------	0-5	Very gravelly loam.	GM-GC, GC	A-2	5-15	40-50	30-40	20-35	15-30	25-35	5-15
	5-15	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Wiskan----------	0-16	Gravelly loam----	SM, CL-ML, SM-SC, ML	A-4	0-15	70-85	60-75	55-75	40-60	20-30	NP-10
	16-28	Very gravelly clay loam, very gravelly loam, extremely gravelly clay loam.	GC	A-2	10-25	40-55	30-45	25-45	20-35	30-40	10-20
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3152*:											
Robson	0-7	Cobbly loam	SM-SC, SC, CL-ML, CL	A-4, A-6	15-45	90-95	65-95	55-65	45-60	25-35	5-15
	7-19	Very cobbly clay, extremely cobbly clay.	GC	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan	0-8	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	45-60	40-55	30-45	25-30	5-10
	8-33	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	33-37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3156*:											
Robson	0-10	Extremely cobbly loam.	GM-GC, GC	A-2	45-55	30-45	20-35	15-35	10-25	25-35	5-15
	10-14	Very cobbly clay loam.	GC	A-7	30-45	55-75	50-60	40-60	35-50	40-45	15-20
	14-19	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Old Camp	0-2	Very cobbly loam	GM, GM-GC, SM, SM-SC	A-2, A-4	25-55	60-70	55-65	45-55	30-40	15-25	NP-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
3203*:											
Dewar	0-4	Very gravelly loam.	GC	A-2	0	35-60	25-50	20-40	15-30	25-35	10-15
	4-14	Gravelly silty clay loam, gravelly clay loam.	GC, CL	A-6, A-7	0-10	65-90	60-80	55-80	45-75	35-45	15-20
	14-50	Indurated	---	---	---	---	---	---	---	---	---
Sodhouse	0-3	Gravelly very fine sandy loam.	SM	A-2, A-4	0-10	65-75	55-65	45-65	30-40	15-25	NP-5
	3-17	Fine sandy loam, very fine sandy loam.	ML, SM	A-4	0	80-100	75-90	65-85	35-55	15-25	NP-5
	17-29	Indurated	---	---	---	---	---	---	---	---	---
	29-60	Extremely gravelly sandy loam, very gravelly loamy sand.	GM, GP-GM	A-1	5-20	25-60	15-50	10-40	5-25	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3203*:											
Bojo	0-4	Gravelly loam	CL-ML	A-4	25-40	70-85	65-80	65-80	50-65	20-30	5-10
	4-10	Sandy clay loam, clay loam.	SC	A-6	0-5	90-100	75-90	55-70	35-50	30-40	10-20
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3410*:											
Zoesta	0-7	Cobbly loam	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15
Wieland	0-8	Gravelly loam	GC, CL, SC	A-6	0-5	60-85	50-75	45-70	35-60	25-35	10-15
	8-20	Gravelly clay, clay.	CH, SC	A-7	0-5	75-95	55-90	50-80	45-75	50-60	25-35
	20-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10
Akerue	0-3	Gravelly loam	GC, GM-GC, SC, SM-SC	A-4, A-6	0-5	65-80	55-70	45-60	35-50	25-35	5-15
	3-15	Very cobbly clay, very cobbly clay loam.	GC, CL, SC	A-7	30-50	65-80	55-75	50-70	40-55	40-50	15-25
	15-21	Indurated	---	---	---	---	---	---	---	---	---
	21-25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3413*:											
Zoesta	0-7	Cobbly loam	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15
Reluctan	0-9	Gravelly loam	SM-SC, CL-ML	A-4	5-10	70-80	60-75	50-65	40-55	25-30	5-10
	9-27	Gravelly clay loam, gravelly loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3415*:											
Zoesta	0-7	Cobbly loam	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3415*:											
Handy	0-4	Gravelly loam	SM-SC, GM-GC, SC, GC	A-4, A-6	10-25	65-80	55-70	45-60	35-50	25-35	5-15
	4-30	Gravelly clay, clay.	CL, CH	A-7	0-5	80-100	70-90	65-80	55-70	45-55	20-30
	30-60	Gravelly loam	SM-SC, GM-GC	A-4	0-10	65-80	55-70	50-65	35-50	20-30	5-10
3417*:											
Zoesta	0-7	Cobbly loam	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15
Loncan	0-14	Gravelly silt loam.	GC, CL	A-6	0-15	65-80	60-75	50-70	35-60	30-35	10-15
	14-31	Very gravelly loam, extremely cobbly loam, very gravelly sandy clay loam.	GC	A-2	10-55	35-60	30-50	25-40	20-35	30-35	10-15
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Welch	0-4	Silt loam	CL-ML	A-4	0	95-100	95-100	85-95	60-70	25-30	5-10
	4-60	Stratified sandy loam to silty clay loam.	CL	A-6, A-7	0	80-100	75-100	65-90	50-70	35-45	15-20
3420*:											
Belate	0-14	Gravelly loam	SM-SC, CL-ML	A-4	5-10	75-85	60-75	55-70	45-60	20-25	5-10
	14-60	Very gravelly clay loam, very gravelly loam.	GC	A-2, A-6	5-10	50-65	35-50	35-45	30-40	25-35	10-15
Sumine	0-10	Very gravelly loam.	GM-GC	A-2, A-4	10-15	50-65	45-60	40-50	30-40	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble	0-16	Very cobbly loam	GM-GC, SM-SC	A-4	40-50	65-80	60-75	50-65	35-50	20-30	5-10
	16-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	45-60	35-50	30-45	25-40	35-45	15-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3423*:											
Belate	0-14	Very gravelly loam.	GM-GC	A-2	5-15	50-65	35-50	30-40	25-35	20-25	5-10
	14-60	Very gravelly clay loam, very gravelly loam.	GC	A-2, A-6	5-10	50-65	35-50	35-45	30-40	25-35	10-15
Cleavage	0-4	Extremely gravelly loam.	GM-GC	A-2	0-10	35-45	15-25	10-25	10-20	25-30	5-10
	4-15	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Softscrabble	0-9	Gravelly loam	SM-SC	A-4	0-5	70-85	55-70	45-60	35-50	20-30	5-10
	9-30	Very cobbly clay loam.	GC	A-6, A-7	30-45	60-75	50-65	45-60	35-50	35-45	15-20
	30-60	Gravelly clay loam.	GC, CL	A-6, A-7	5-10	65-80	55-70	50-65	40-55	35-45	15-20
3432*:											
Bregar	0-4	Very cobbly loam	GC, GM-GC, CL, CL-ML	A-2, A-4, A-6	30-50	50-75	45-70	40-65	30-55	20-35	5-15
	4-11	Very gravelly clay loam, extremely gravelly loam, extremely cobbly sandy clay loam.	GC	A-2	0-40	25-60	20-50	15-45	15-35	35-45	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Roca	0-5	Very gravelly loam.	GC	A-2	0-10	35-60	30-50	25-40	20-35	25-35	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-15	60-75	40-50	30-45	25-35	45-60	25-35
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Quarz	0-7	Extremely gravelly loam.	GP-GC, GC	A-2	0-15	20-35	10-25	10-20	5-15	25-35	10-15
	7-26	Very gravelly clay, very gravelly clay loam.	GC	A-2, A-7	0-25	30-55	25-50	20-45	15-40	45-60	20-30
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3433*:											
Bregar	0-4	Very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	10-20	55-70	40-55	35-50	25-40	25-35	5-15
	4-11	Very gravelly sandy clay loam, extremely cobbly clay loam, very gravelly clay loam.	GC	A-2	5-45	40-50	25-35	20-30	10-25	35-45	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Punchbowl	0-3	Gravelly loam	SM	A-2, A-4	5-10	65-85	60-75	45-60	30-45	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3451*:											
Reluctan	0-8	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	45-60	40-55	30-45	25-30	5-10
	8-33	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	33-37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Robson	0-10	Very cobbly loam	GM-GC, GC, SM-SC, SC	A-2	30-50	55-75	50-65	30-50	25-35	25-35	5-15
	10-14	Very cobbly clay loam.	GC	A-7	30-45	55-75	50-60	40-60	35-50	40-45	15-20
	14-19	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sumine	0-10	Very cobbly loam	GM-GC	A-2, A-4	30-55	55-65	50-60	40-55	30-45	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3452*:											
Reluctan	0-8	Cobbly loam	SM-SC, CL-ML	A-4	15-30	80-90	70-90	60-85	40-70	20-30	5-10
	8-33	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	33-37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3452*:											
Sumine	0-10	Very cobbly loam	GM-GC	A-2, A-4	30-55	55-65	50-60	40-55	30-45	20-30	5-10
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Colbar	0-3	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3453*:											
Reluctan	0-8	Very gravelly loam.	GM-GC	A-2, A-4	10-25	35-65	30-55	25-55	20-40	25-30	5-10
	8-33	Gravelly clay loam, gravelly loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	33-37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Locane	0-6	Extremely gravelly sandy loam.	GM-GC, GP-GC	A-2	5-20	40-55	15-25	10-20	5-15	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Itca	0-9	Very cobbly loam	GM-GC, GC	A-4, A-6	30-50	60-75	50-65	45-60	35-50	25-35	5-15
	9-17	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2	0-55	40-80	30-75	25-70	20-60	40-50	15-25
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3455*:											
Reluctan	0-8	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	45-60	40-55	30-45	25-30	5-10
	8-33	Gravelly loam, gravelly clay loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	33-37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Roca	0-5	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3455*:											
Colbar----------	0-3	Cobbly loam------	CL-ML	A-4	35-45	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3560*:											
Locane----------	0-6	Very gravelly loam.	GM-GC	A-2	5-15	50-65	30-45	25-40	15-30	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Robson----------	0-7	Gravelly loam----	SM-SC, SC, CL-ML, CL	A-4, A-6	5-15	70-85	60-75	50-65	40-55	25-35	5-15
	7-19	Very cobbly clay, extremely cobbly clay.	GC, GM	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bregar----------	0-4	Extremely gravelly loam.	GM-GC, GC	A-2	10-20	35-50	20-30	15-25	10-20	25-35	5-15
	4-11	Very gravelly sandy clay loam, extremely cobbly clay loam, very gravelly clay loam.	GC	A-2	5-45	40-50	25-35	20-30	10-25	35-45	15-25
	11-15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3561*:											
Locane----------	0-6	Very gravelly loam.	GM-GC	A-2	5-15	50-65	30-45	25-40	15-30	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sumine----------	0-10	Gravelly loam----	GM, SM	A-2, A-4	0	55-80	50-75	35-70	25-50	20-25	NP-5
	10-30	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	30-34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3561*:											
Glean	0-6	Gravelly silt loam.	GM, SM, ML	A-4	0-10	55-80	50-75	45-65	40-55	20-30	NP-5
	6-49	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0-25	30-65	25-60	20-50	10-35	20-30	NP-5
	49-53	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3564*:											
Locane	0-6	Very gravelly fine sandy loam.	GM-GC	A-2	5-15	50-65	30-45	25-40	15-30	20-30	5-10
	6-14	Very gravelly clay loam.	GC	A-2, A-7, A-6	0-10	50-65	35-50	30-45	25-40	35-45	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Zoesta	0-7	Cobbly loam	CL-ML, ML	A-4	25-40	80-90	75-90	65-80	50-65	20-30	NP-10
	7-23	Clay	CL, CH	A-7	0-10	90-100	85-95	75-90	65-80	45-60	20-30
	23-31	Gravelly clay loam, gravelly clay.	GC, CL	A-6, A-7	0	60-75	55-70	50-65	40-55	35-50	15-25
	31-60	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	45-55	30-45	25-40	20-35	30-40	10-15
Bucan	0-5	Cobbly loam	CL	A-6	20-25	75-85	70-80	65-75	50-60	30-35	10-15
	5-30	Clay	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	30-52	Cobbly clay, gravelly clay loam, gravelly clay.	CL	A-7	10-30	75-90	70-85	60-70	50-60	40-50	25-35
	52-56	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3621*:											
Minat	0-9	Very cobbly sandy loam.	SM-SC	A-2	30-45	60-75	50-65	40-55	20-35	20-30	5-10
	9-27	Very gravelly loam.	GC, GM-GC	A-2	0-10	45-60	30-50	25-45	20-35	25-35	5-15
	27-60	Very gravelly loam, very gravelly fine sandy loam.	GM-GC, GC	A-2	0-10	45-60	30-50	20-45	15-30	25-35	5-15
Bojo	0-4	Extremely gravelly loam.	GM-GC	A-2	10-25	40-55	20-35	15-30	10-25	20-25	5-10
	4-10	Gravelly clay loam, gravelly loam, clay loam.	GC, CL	A-6, A-7	0-10	70-90	65-85	60-80	45-70	35-45	15-20
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Stingdorn	0-7	Very gravelly loam.	GM, GM-GC	A-1, A-2	5-10	45-60	35-50	30-45	20-35	15-25	NP-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3622*:											
Minat	0-9	Very cobbly loam	GM-GC, GC, SM-SC, SC	A-2, A-4, A-6	30-45	60-75	50-65	40-55	30-45	25-35	5-15
	9-27	Very gravelly loam.	GC, GM-GC	A-2	0-10	45-60	30-50	25-45	20-35	25-35	5-15
	27-60	Very gravelly loam, very gravelly fine sandy loam.	GM-GC, GC	A-2	0-10	45-60	30-50	20-45	15-30	25-35	5-15
Minat, eroded	0-4	Very cobbly loam	GM-GC, GC, SM-SC, SC	A-2, A-4, A-6	30-45	60-75	50-65	40-55	30-45	25-35	5-15
	4-21	Very gravelly loam.	GC, GM-GC	A-2	0-10	45-60	30-50	25-45	20-35	25-35	5-15
	21-60	Very gravelly loam, very gravelly fine sandy loam.	GM-GC, GC	A-2	0-10	45-60	30-50	20-45	15-30	25-35	5-15
3624*:											
Minat	0-9	Very cobbly loam	GM-GC, GC, SM-SC, SC	A-2, A-4, A-6	30-45	60-75	50-65	40-55	30-45	25-35	5-15
	9-27	Very gravelly loam.	GC, GM-GC	A-2	0-10	45-60	30-50	25-45	20-35	25-35	5-15
	27-60	Very gravelly loam, very gravelly fine sandy loam.	GM-GC, GC	A-2	0-10	45-60	30-50	20-45	15-30	25-35	5-15
Colbar	0-3	Cobbly loam	CL-ML	A-4	35-45	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Atlow	0-3	Very cobbly loam	SM-SC	A-4	35-50	70-80	60-75	50-65	35-50	20-30	5-10
	3-14	Very gravelly clay loam.	GC	A-2, A-6	5-15	45-60	35-50	30-45	25-40	30-40	10-15
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3650*:											
McVegas	0-5	Very cobbly loam	SM	A-4	35-45	70-85	55-70	50-65	35-50	15-25	NP-5
	5-19	Very cobbly silty clay, very cobbly clay, very cobbly clay loam.	CL, CH, GC	A-7	30-40	70-85	65-75	50-70	45-70	40-55	20-30
	19-22	Cemented	---	---	---	---	---	---	---	---	---
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3650*:											
Old Camp--------	0-2	Very gravelly loam.	GM, GM-GC	A-1, A-2	0-15	50-60	35-45	30-40	20-30	15-25	NP-10
	2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam.	GC	A-2, A-6	35-50	40-55	35-50	30-45	25-40	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Kingingham------	0-7	Gravelly very fine sandy loam.	SM	A-2, A-4	0-5	70-85	55-70	50-65	30-50	15-25	NP-5
	7-22	Gravelly clay loam, gravelly clay, gravelly silty clay loam.	GC, CL, CH	A-7	0-5	70-85	55-70	50-65	45-60	40-55	20-30
	22-60	Indurated--------	---	---	---	---	---	---	---	---	---
3651*:											
McVegas---------	0-5	Cobbly loam------	ML, SM, GM	A-4	20-30	70-90	70-80	55-70	45-65	20-30	NP-5
	5-19	Very cobbly silty clay, very cobbly clay, very cobbly clay loam.	CL, CH, GC	A-7	30-40	70-85	65-75	50-70	45-70	40-55	20-30
	19-22	Cemented---------	---	---	---	---	---	---	---	---	---
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Beoska----------	0-8	Gravelly loam----	SM, SM-SC	A-4	0-10	70-80	55-75	40-65	35-50	20-30	NP-10
	8-18	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	18-60	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
3652*:											
McVegas---------	0-5	Very cobbly loam	SM	A-4	35-45	70-85	55-70	50-65	35-50	15-25	NP-5
	5-19	Very cobbly silty clay, very cobbly clay, very cobbly clay loam.	CL, CH, GC	A-7	30-40	70-85	65-75	50-70	45-70	40-55	20-30
	19-22	Cemented---------	---	---	---	---	---	---	---	---	---
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Stingdorn-------	0-7	Extremely cobbly fine sandy loam.	GM, GM-GC	A-1, A-2	50-60	45-60	35-50	30-45	15-30	15-25	NP-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated--------	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3652*:											
Colbar----------	0-3	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	3-22	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	22-26	Gravelly loam, cobbly loam.	SM-SC, CL-ML	A-4	5-30	75-95	60-90	55-75	35-55	20-30	5-10
	26-30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3661*:											
Dun Glen--------	0-3	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	50-65	15-25	NP-5
	3-10	Silt loam, very fine sandy loam.	ML	A-4	0	95-100	90-100	85-100	55-70	15-25	NP-5
	10-60	Fine sandy loam, very fine sandy loam.	SM	A-4	0	90-100	85-100	70-85	35-50	15-25	NP-5
Whirlo----------	0-12	Fine sandy loam	ML, SM	A-4	0	80-95	75-85	65-80	45-60	20-25	NP-5
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	24-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
3690*:											
Izod----------	0-4	Cobbly loam------	SM-SC, SM, CL-ML, ML	A-4	15-30	80-95	70-90	55-75	45-65	25-35	5-10
	4-10	Very gravelly loam, extremely gravelly loam.	GM-GC, GM	A-2	0-25	20-55	15-50	15-45	10-35	25-35	5-10
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Koynik----------	0-6	Very gravelly very fine sandy loam.	GM-GC, SM-SC, GM, SM	A-2, A-1	0-5	55-70	35-50	30-45	15-30	20-30	NP-10
	6-8	Very gravelly loam, very gravelly very fine sandy loam, very gravelly silt loam.	GM-GC, SM-SC, GC, SC	A-2	0-5	55-70	35-50	30-45	15-30	25-35	5-15
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3691*:											
Izod	0-4	Extremely cobbly loam.	SM-SC, SM, GM-GC, GM	A-2	40-50	55-70	25-40	20-40	15-35	25-35	5-10
	4-10	Very gravelly loam, extremely gravelly loam.	GM-GC, GM	A-2	0-25	20-55	15-50	15-45	10-35	25-35	5-10
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
3693*:											
Izod	0-4	Cobbly loam	SM-SC, SM, CL-ML, ML	A-4	15-30	80-95	70-90	55-75	45-65	25-35	5-10
	4-10	Very gravelly loam, extremely gravelly loam.	GM-GC, GM	A-2	0-25	20-55	15-50	15-45	10-35	25-35	5-10
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Attella	0-3	Very gravelly loam.	GM	A-1, A-2	5-15	35-55	30-50	25-40	20-35	25-35	NP-10
	3-7	Very gravelly loam, very gravelly silt loam.	GC, GM-GC	A-2	5-15	35-55	30-50	25-40	20-35	25-40	5-15
	7	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Xine	0-10	Gravelly loam	SM	A-2, A-4	0-5	65-80	50-75	45-60	30-45	15-25	NP-5
	10-33	Very cobbly loam, very cobbly sandy loam.	GM, SM	A-2, A-4, A-1	35-50	55-80	50-75	35-60	20-45	15-25	NP-5
	33	Weathered bedrock	---	---	---	---	---	---	---	---	---
3740	0-3	Silt loam	CL-ML, ML	A-4	0	100	100	95-100	85-95	25-35	5-10
Kelk	3-18	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	18-42	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
	42-60	Silt loam	CL-ML, ML	A-4	0	95-100	95-100	95-100	85-95	25-35	5-10
3741*:											
Kelk	0-14	Very fine sandy loam.	CL-ML	A-4	0	100	100	90-95	65-75	25-30	5-10
	14-51	Silt loam	CL-ML, CL	A-4, A-6	0	95-100	95-100	95-100	85-95	25-35	5-15
	51-60	Silt loam	CL-ML, CL	A-4, A-6	0	95-100	90-100	90-100	80-95	25-35	5-15
Settlemeyer	0-16	Fine sandy loam	SM, SM-SC	A-4	0	100	100	75-90	35-50	20-30	NP-10
	16-40	Silt loam, silty clay loam.	CL	A-6, A-7	0	95-100	90-100	85-90	60-85	35-45	15-20
	40-60	Fine sandy loam	CL-ML, SM-SC	A-4	0	95-100	90-100	80-90	40-60	20-30	5-10
3742*:											
Kelk	0-14	Very fine sandy loam.	CL-ML	A-4	0	100	100	90-95	65-75	25-30	5-10
	14-51	Silt loam	CL-ML, CL	A-4, A-6	0	95-100	95-100	95-100	85-95	25-35	5-15
	51-60	Silt loam	CL-ML, CL	A-4, A-6	0	95-100	90-100	90-100	80-95	25-35	5-15
Ocala	0-13	Silt loam	ML, CL	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
	13-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	90-100	90-100	90-95	85-90	30-50	10-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3840*:											
Jung	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Norfork	0-3	Gravelly loam	GM-GC, GC	A-4, A-6	0-5	60-75	55-70	45-60	35-50	25-35	5-15
	3-14	Gravelly silty clay, gravelly silty clay loam.	GM, ML, MH	A-7	0	60-75	55-70	50-65	45-60	45-60	15-20
	14-17	Gravelly loam	GM-GC, GC, SM-SC, SC	A-4, A-6	0	55-80	50-75	40-60	35-50	25-35	5-15
	17-22	Indurated	---	---	---	---	---	---	---	---	---
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Buffaran	0-4	Gravelly loam	SC, CL	A-6	5-15	75-90	70-80	50-75	40-60	25-35	10-15
	4-15	Gravelly clay loam, gravelly clay, clay.	CL, CH	A-7	0-5	75-90	70-85	65-80	50-65	40-55	20-30
	15-60	Indurated	---	---	---	---	---	---	---	---	---
3841*:											
Jung	0-8	Very cobbly loam	GM-GC, SM-SC	A-4		35-50	65-80	50-65	45-60	35-50	25-30	5-10
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7		15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Itca	0-9	Very cobbly loam	GM-GC, GC	A-4, A-6		30-50	60-75	50-65	45-60	35-50	25-35	5-15
	9-17	Very cobbly clay loam, very gravelly clay, extremely gravelly clay.	CL, GC	A-7, A-2		0-55	40-80	30-75	25-70	20-60	40-50	15-25
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Roca	0-5	Very cobbly loam	CL	A-6		50-60	85-100	75-85	70-80	50-60	25-35	10-15
	5-27	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2		0-10	60-75	30-50	25-45	20-35	45-60	20-30
	27-31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3843*:											
Jung, steep-----	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Robson----------	0-7	Cobbly loam------	SM-SC, SC, CL-ML, CL	A-4, A-6	15-45	90-95	65-95	55-65	45-60	25-35	5-15
	7-19	Very cobbly clay, extremely cobbly clay.	GC	A-7	50-80	60-70	50-65	40-55	35-50	45-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Jung----------	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3845*:											
Jung----------	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Stingdorn-------	0-7	Extremely cobbly loam.	GM, GM-GC	A-1, A-2	50-60	45-60	35-50	30-45	15-30	15-25	NP-10
	7-15	Very cobbly clay loam.	GC	A-6	30-50	60-75	50-65	45-60	35-50	35-40	15-20
	15-20	Indurated--------	---	---	---	---	---	---	---	---	---
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Atlow----------	0-3	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	3-14	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3846*:											
Jung	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Wiskan	0-16	Very gravelly silt loam.	GM, GM-GC	A-1, A-2, A-4	0-15	40-60	30-50	25-50	20-40	20-30	NP-10
	16-28	Very gravelly clay loam, very gravelly loam, extremely gravelly clay loam.	GC	A-2	10-25	40-55	30-45	25-45	20-35	30-40	10-20
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3881*:											
Layview	0-3	Extremely cobbly loam.	GM-GC	A-4	50-65	60-75	55-65	45-60	35-50	25-30	5-10
	3-12	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	10-15	45-55	40-50	35-45	30-40	30-40	15-20
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Packer	0-10	Gravelly loam	SM-SC, GM-GC	A-4	0-10	65-80	55-70	45-60	35-50	20-30	5-10
	10-21	Extremely cobbly clay loam, extremely cobbly loam.	GC	A-2	40-55	40-55	30-45	25-40	15-30	30-40	10-15
	21-60	Extremely cobbly sandy loam, extremely cobbly loam.	GM	A-1	40-55	40-55	30-45	20-35	10-25	20-25	NP-5
Hapgood	0-17	Gravelly loam	SM-SC	A-4	5-10	70-80	60-75	55-70	35-50	25-30	5-10
	17-40	Very gravelly loam.	GC, GM-GC	A-2	5-25	50-60	35-50	30-40	20-35	25-35	5-15
	40-60	Very cobbly loam, very gravelly loam.	GC, GM-GC	A-2	15-40	55-65	50-60	35-45	25-35	25-35	5-15
3950*:											
Hooplite	0-4	Very gravelly loam.	GM-GC	A-2	0-10	45-60	35-50	30-45	20-35	20-30	5-10
	4-8	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	0-15	45-60	35-50	30-45	25-40	30-40	10-15
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3950*:											
Jung	0-8	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-45	20-35	20-25	NP-5
	8-19	Very cobbly clay loam, very cobbly clay, very gravelly clay loam.	GC	A-7	15-40	55-65	50-60	40-50	35-45	40-55	20-30
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Izod	0-4	Very cobbly loam	SM-SC, SM, GM-GC, GM	A-2, A-4	25-40	60-80	40-65	35-55	25-50	25-35	5-10
	4-10	Very gravelly loam, extremely gravelly loam.	GM-GC, GM	A-2	0-25	20-55	15-50	15-45	10-35	25-35	5-10
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3961*:											
Pineval	0-5	Very cobbly loam	SM-SC, GM-GC	A-4	30-40	65-80	55-70	45-60	35-50	20-30	5-10
	5-11	Very gravelly clay loam, very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0-5	35-60	25-50	20-40	15-35	30-40	10-15
	11-60	Stratified very gravelly sandy loam to extremely gravelly sand.	GP-GM, GM	A-1	0	30-60	20-50	15-40	5-20	---	NP
Orovada	0-8	Cobbly fine sandy loam.	SM	A-4	25-35	85-95	75-90	60-75	35-50	15-25	NP-5
	8-26	Fine sandy loam, loam.	SM, ML	A-4	0	90-100	80-95	60-80	40-60	20-30	NP-5
	26-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	90-100	80-95	60-85	35-55	20-30	NP-5
Beoska	0-13	Very fine sandy loam.	ML, SM	A-4	0	85-95	75-95	70-80	45-65	15-25	NP-5
	13-24	Silt loam, silty clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	24-55	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	55-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
3990	0-10	Fine sandy loam	SM, SM-SC	A-4	0	100	100	75-90	35-50	20-30	NP-10
Settlemeyer	10-36	Silt loam, silty clay loam.	CL	A-6, A-7	0	95-100	90-100	85-90	60-85	35-45	15-20
	36-60	Fine sandy loam	CL-ML, SM-SC	A-4	0	95-100	90-100	80-90	40-60	20-30	5-10

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3992*:											
Settlemeyer, drained	0-16	Loam	CL, CL-ML	A-4, A-6	0	100	100	80-95	60-75	25-35	5-15
	16-40	Silt loam, silty clay loam.	CL	A-6, A-7	0	95-100	90-100	85-90	60-85	35-45	15-20
	40-60	Fine sandy loam	CL-ML, SM-SC	A-4	0	95-100	90-100	80-90	40-60	20-30	5-10
Settlemeyer	0-15	Loam	CL	A-6	0	90-100	90-100	75-90	50-65	25-35	10-15
	15-35	Silty clay loam, clay loam.	CL	A-6	0	100	100	80-100	75-90	35-40	15-20
	35-60	Stratified very gravelly loamy sand to silty clay loam.	GC, CL, GM-GC, CL-ML	A-4, A-6	0-5	60-90	60-85	45-80	35-60	15-25	5-15
4051*:											
Attella	0-4	Very gravelly loam.	GM	A-1, A-2	5-15	35-55	30-50	25-40	20-35	25-35	NP-10
	4-13	Very gravelly loam, very gravelly silt loam.	GC, GM-GC	A-2	5-15	35-55	30-50	25-40	20-35	25-40	5-15
	13-17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Xine	0-10	Gravelly loam	SM	A-2, A-4	0-5	65-80	50-75	45-60	30-45	15-25	NP-5
	10-33	Very cobbly loam, very cobbly sandy loam.	GM, SM	A-2, A-4, A-1	35-50	55-80	50-75	35-60	20-45	15-25	NP-5
	33	Weathered bedrock	---	---	---	---	---	---	---	---	---
Kram	0-3	Very cobbly loam	SM	A-4	35-45	70-85	55-70	50-65	35-50	15-25	NP-5
	3-10	Very gravelly loam, very gravelly very fine sandy loam, extremely gravelly loam.	GM	A-1, A-2	0-15	25-60	15-55	15-45	10-30	15-25	NP-5
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
4070*:											
Genaw	0-6	Gravelly loam	GM-GC, SM-SC	A-4	0-5	65-80	55-75	45-65	35-50	20-30	5-10
	6-11	Gravelly loam, gravelly clay loam.	GC, SC	A-6	0-5	60-80	55-75	45-65	35-50	25-35	10-15
	11-16	Very gravelly loam.	GM-GC	A-2	0-5	45-55	35-50	25-45	20-35	25-30	5-10
	16	Weathered bedrock	---	---	---	---	---	---	---	---	---
Wieland	0-8	Gravelly loam	GC, CL, SC	A-6	0-5	60-85	50-75	45-70	35-60	25-35	10-15
	8-20	Gravelly clay, clay.	CH, SC	A-7	0-5	75-95	55-90	50-80	45-75	50-60	25-35
	20-60	Loam, gravelly loam, gravelly sandy loam.	CL-ML, SM-SC	A-4, A-2	0-5	65-95	55-90	40-85	25-70	20-30	5-10

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
4070*:											
Grina	0-3	Very gravelly loam.	GM-GC, GC	A-2	0-5	45-60	30-45	25-40	15-30	25-35	5-15
	3-14	Loam, silt loam, silty clay loam.	CL	A-6, A-7	0	90-100	80-100	75-95	60-85	30-45	10-20
	14-18	Weathered bedrock	---	---	---	---	---	---	---	---	---
4071*:											
Genaw	0-6	Very fine sandy loam.	SM, SM-SC	A-4	0	90-100	85-95	75-90	35-50	15-30	NP-10
	6-11	Gravelly loam, gravelly clay loam.	GC, SC	A-6	0-5	60-80	55-75	45-65	35-50	25-35	10-15
	11-16	Very gravelly loam.	GM-GC	A-2	0-5	45-55	35-50	25-45	20-35	25-30	5-10
	16	Weathered bedrock	---	---	---	---	---	---	---	---	---
Perlor	0-7	Very fine sandy loam.	SM, ML	A-4	0-5	85-100	80-100	75-90	40-55	15-25	NP-5
	7-14	Loam, sandy loam, gravelly sandy loam.	SM, ML	A-4	0-5	75-100	70-95	50-80	35-65	15-25	NP-5
	14	Weathered bedrock	---	---	---	---	---	---	---	---	---
Puett	0-4	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	40-50	35-45	20-35	15-20	NP-5
	4-15	Coarse sandy loam, gravelly loam, sandy loam.	SM, ML, GM	A-1, A-2, A-4	0	55-95	50-90	30-80	15-55	---	NP
	15-19	Weathered bedrock	---	---	---	---	---	---	---	---	---
4072*:											
Genaw	0-6	Very fine sandy loam.	SM, SM-SC	A-4	0	90-100	85-95	75-90	35-50	15-30	NP-10
	6-11	Gravelly loam, gravelly clay loam.	GC, SC	A-6	0-5	60-80	55-75	45-65	35-50	25-35	10-15
	11-16	Very gravelly loam.	GM-GC	A-2	0-5	45-55	35-50	25-45	20-35	25-30	5-10
	16	Weathered bedrock	---	---	---	---	---	---	---	---	---
Orovada	0-8	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	8-20	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	20-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Puett	0-4	Fine sandy loam	SM	A-4	0	90-100	85-95	60-80	35-50	---	NP
	4-15	Coarse sandy loam, fine sandy loam, sandy loam.	SM, ML	A-1, A-2, A-4	0	80-100	75-95	40-80	15-55	---	NP
	15-19	Weathered bedrock	---	---	---	---	---	---	---	---	---
4091*:											
Coztur	0-11	Loam	SM-SC, CL-ML	A-4	0	85-95	80-90	70-85	45-60	20-25	5-10
	11-17	Loam, clay loam	CL	A-6	0	90-100	85-95	70-85	50-65	30-40	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
4091*:											
Genaw	0-6	Very fine sandy loam.	SM, SM-SC	A-4	0	90-100	85-95	75-90	35-50	15-30	NP-10
	6-11	Gravelly loam, gravelly clay loam.	GC, SC	A-6	0-5	60-80	55-75	45-65	35-50	25-35	10-15
	11-16	Very gravelly loam.	GM-GC	A-2	0-5	45-55	35-50	25-45	20-35	25-30	5-10
	16	Weathered bedrock	---	---	---	---	---	---	---	---	---
4093*:											
Coztur	0-11	Gravelly loam	GM-GC, SM-SC	A-2, A-4	0-10	60-80	55-75	50-70	30-50	20-25	5-10
	11-17	Loam, clay loam	CL	A-6	0	90-100	85-95	70-85	50-65	30-40	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Teguro	0-6	Very gravelly loam.	GM	A-1, A-2	0-5	40-55	35-50	30-45	20-35	15-25	NP-5
	6-16	Gravelly clay loam, gravelly loam.	SC	A-2, A-6	0-10	65-80	50-75	35-60	30-50	30-40	15-20
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Punchbowl	0-3	Gravelly loam	SM	A-2, A-4	5-10	65-85	60-75	45-60	30-45	15-25	NP-5
	3-7	Loam, gravelly loam.	SC, GC, CL	A-6	0-5	70-100	65-95	60-85	45-55	25-35	10-15
	7-11	Gravelly clay loam, gravelly sandy clay loam.	GC	A-6, A-7	0-5	55-65	50-60	45-55	35-45	35-45	15-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
4140	0-4	Loam	CL-ML	A-4	0	95-100	95-100	85-95	60-70	25-30	5-10
Welch	4-60	Stratified sandy loam to silty clay loam.	CL	A-6, A-7	0	80-100	75-100	65-90	50-70	35-45	15-20

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Akerue	Clayey-skeletal, montmorillonitic, frigid, shallow Xerollic Durargids
Alley	Fine-loamy, mixed, mesic Durixerollic Haplargids
Allor	Fine-loamy, mixed, mesic Durixerollic Haplargids
Alyan	Fine, montmorillonitic, frigid Aridic Argixerolls
Antel	Fine-silty, mixed, mesic Duric Camborthids
Argenta	Coarse-loamy, mixed (calcareous), mesic Aeric Halaquepts
Atlow	Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids
Attella	Loamy-skeletal, mixed (calcareous), frigid Lithic Xeric Torriorthents
Batan	Fine-silty, mixed (calcareous), mesic Durorthidic Torriorthents
Belate	Loamy-skeletal, mixed, frigid Aridic Argixerolls
Beoska	Fine-loamy, mixed, mesic Duric Natrargids
Beowawe	Fine-loamy, mixed, mesic Duric Natrargids
Beowawe Variant	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Natrargids
Berning	Clayey-skeletal, montmorillonitic, mesic Xerollic Haplargids
Bioya	Fine-loamy, mixed, mesic Xerollic Durorthids
Blacka	Coarse-loamy, mixed, mesic Entic Durorthids
Blackhawk	Loamy, mixed, mesic, shallow Entic Durorthids
Bojo	Loamy, mixed, mesic Lithic Haplargids
*Boulflat	Fine-loamy, mixed, mesic Haploxerollic Durargids
Bregar	Loamy-skeletal, mixed, frigid Lithic Xerollic Haplargids
Broyles	Coarse-loamy, mixed, mesic Duric Camborthids
Bubus	Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents
Bucan	Fine, montmorillonitic, frigid Xerollic Haplargids
Buffaran	Clayey, montmorillonitic, mesic, shallow Xerollic Durargids
Burnborough	Loamy-skeletal, mixed, frigid Aridic Argixerolls
Burrita	Clayey-skeletal, montmorillonitic, mesic Lithic Xerollic Haplargids
Caniwe	Fine-silty, mixed, mesic Aridic Duric Haploxerolls
Chen	Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls
Cherry Spring	Fine-loamy, mixed, mesic Haploxerollic Durargids
Chiara	Loamy, mixed, mesic, shallow Xerollic Durorthids
Clanalpine	Loamy-skeletal, mixed, frigid Typic Argixerolls
Cleavage	Loamy-skeletal, mixed, frigid Lithic Argixerolls
Colbar	Fine-loamy, mixed, mesic Xerollic Haplargids
Cortez	Fine, montmorillonitic, mesic Xerollic Nadurargids
Coztur	Loamy, mixed, frigid Lithic Xerollic Haplargids
Creemon	Coarse-silty, mixed, mesic Duric Camborthids
Cren	Coarse-silty, mixed (calcareous), mesic Durorthidic Torriorthents
Davey	Sandy, mixed, mesic Xerollic Camborthids
Desatoya	Clayey over loamy-skeletal, montmorillonitic, mesic Durixerollic Haplargids
Dewar	Loamy, mixed, mesic, shallow Xerollic Durargids
Doowak	Sandy-skeletal, mixed, mesic Xeric Torriorthents
Duffer	Fine-silty, carbonatic, mesic Aquic Calciorthids
Dun Glen	Coarse-loamy, mixed, mesic Typic Camborthids
Dunphy	Coarse-loamy, mixed (calcareous), mesic Aeric Halaquepts
Enko	Coarse-loamy, mixed, mesic Durixerollic Camborthids
Filiran	Fine, montmorillonitic, mesic Haploxerollic Nadurargids
Floer	Clayey-skeletal, montmorillonitic, frigid Aridic Palexerolls
Genaw	Loamy, mixed, mesic, shallow Xerollic Haplargids
Ginex	Loamy-skeletal, mixed, mesic, shallow Xerollic Haplargids
Glean	Loamy-skeletal, mixed, frigid Pachic Haploxerolls
Golconda	Fine-loamy, mixed, mesic Haplic Nadurargids
Goldrun	Mixed, mesic Xeric Torripsamments
Graley	Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls
Graley Variant	Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls
Grassval	Loamy, mixed, mesic, shallow Xerollic Durargids
Grina	Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents
Gund	Fine-silty over clayey, mixed, nonacid, mesic Aquic Durorthidic Torriorthents
Handy	Fine, montmorillonitic, frigid Xerollic Haplargids
Hapgood	Loamy-skeletal, mixed Pachic Cryoborolls
Havingdon	Clayey-skeletal, montmorillonitic, mesic Xerollic Haplargids
Hessing	Coarse-loamy, mixed, mesic Typic Camborthids

TABLE 6.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Hooplite	Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids
Hopeka	Loamy-skeletal, carbonatic, frigid Lithic Xeric Torriorthents
Humboldt	Fine, montmorillonitic (calcareous), mesic Fluvaquentic Haplaquolls
Humdun	Coarse-loamy, mixed, frigid Durixerollic Camborthids
Isolde	Mixed, mesic Typic Torripsamments
Itca	Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls
Izod	Loamy-skeletal, carbonatic, mesic Lithic Xeric Torriorthents
Jenor	Coarse-loamy, mixed, mesic Typic Durorthids
Jung	Clayey-skeletal, montmorillonitic, mesic Lithic Xerollic Haplargids
Kelk	Fine-silty, mixed, mesic Durixerollic Camborthids
Kingingham	Fine, montmorillonitic, mesic Typic Nadurargids
Kodra	Coarse-loamy, mixed, mesic Haploxerollic Durorthids
Koynik	Loamy-skeletal, carbonatic, mesic Lithic Torriorthents
Koynik Variant	Loamy-skeletal, mixed (calcareous), mesic Lithic Torriorthents
Kram	Loamy-skeletal, carbonatic, mesic Lithic Xeric Torriorthents
Kram Variant	Loamy-skeletal, mixed (calcareous), mesic Lithic Xeric Torriorthents
Landco	Coarse-silty over clayey, mixed (calcareous), mesic Typic Torriorthents
Laped	Loamy, mixed, mesic, shallow Typic Durargids
Layview	Loamy-skeletal, mixed Argic Lithic Cryoborolls
Linrose	Loamy-skeletal, mixed, frigid Aridic Haploxerolls
Locane	Clayey-skeletal, montmorillonitic, frigid Lithic Xerollic Haplargids
Loncan	Loamy-skeletal, mixed, frigid Aridic Haploxerolls
Loncan Variant	Loamy-skeletal, mixed, frigid Aridic Haploxerolls
Malpais	Loamy-skeletal, mixed, mesic Typic Camborthids
McConnel	Sandy-skeletal, mixed, mesic Xerollic Camborthids
McVegas	Clayey-skeletal, montmorillonitic, mesic, shallow Haplic Nadurargids
Midraw	Clayey, montmorillonitic, mesic, shallow Xerollic Durargids
*Millerlux	Clayey, montmorillonitic, frigid Lithic Xerollic Haplargids
Minat	Loamy-skeletal, mixed, mesic Xerollic Camborthids
Misad	Loamy-skeletal, mixed (calcareous), mesic Durorthidic Torriorthents
Needle Peak	Fine-silty, mixed (calcareous), mesic Aquic Torriorthents
Newpass	Fine, montmorillonitic, mesic Haploxerollic Nadurargids
Ninemile	Clayey, montmorillonitic, frigid Lithic Argixerolls
Norfork	Clayey, montmorillonitic, mesic, shallow Xerollic Durargids
Ocala	Fine-silty, mixed (calcareous), mesic Aeric Halaquepts
*Old Camp	Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids
Orovada	Coarse-loamy, mixed, mesic Durixerollic Camborthids
Osoll	Loamy-skeletal, mixed, mesic, shallow Typic Durorthids
Osoll Variant	Loamy-skeletal, mixed, mesic Typic Durorthids
Oxcorel	Fine, montmorillonitic, mesic Duric Natrargids
Packer	Loamy-skeletal, mixed Argic Cryoborolls
Paranat	Fine-silty, mixed (calcareous), mesic Fluvaquentic Haplaquolls
Perlor	Loamy, mixed (calcareous), mesic, shallow Typic Torriorthents
Pernty	Loamy-skeletal, mixed, frigid Lithic Argixerolls
Perwick	Coarse-loamy, mixed (calcareous), mesic Xeric Torriorthents
Pineval	Loamy-skeletal, mixed, mesic Durixerollic Haplargids
Prida	Fine-silty, mixed (calcareous), mesic Aquic Durorthidic Torriorthents
Puett	Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents
Pumper	Sandy-skeletal, mixed, mesic Typic Camborthids
Punchbowl	Loamy, mixed, frigid Lithic Xerollic Haplargids
Quarz	Clayey-skeletal, montmorillonitic, frigid Aridic Argixerolls
Raglan	Fine-loamy, mixed, mesic Duric Camborthids
Rasille	Coarse-silty, mixed, mesic Durixerollic Camborthids
Redflame	Loamy-skeletal, mixed, mesic Duric Haplargids
Rednik	Loamy-skeletal, mixed, mesic Typic Haplargids
Reese	Fine-loamy, mixed (calcareous), mesic Aeric Halaquepts
Reina	Clayey-skeletal, montmorillonitic, mesic, shallow Xerollic Durargids
Relley	Fine-silty, mixed, mesic Duric Camborthids
Reluctan	Fine-loamy, mixed, frigid Aridic Argixerolls
Ricert	Fine-loamy, mixed, mesic Duric Natrargids
Rixie	Fine-loamy, mixed, mesic Aquic Duric Haploxerolls
Robson	Clayey-skeletal, montmorillonitic, frigid Lithic Xerollic Haplargids
Roca	Clayey-skeletal, montmorillonitic, frigid Xerollic Haplargids
Rose Creek	Coarse-loamy, mixed, mesic Fluvaquentic Haploxerolls

TABLE 6.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Rosney	Fine-silty, mixed (calcareous), mesic Typic Torriorthents
Settlemeyer	Fine-loamy, mixed, mesic Fluvaquentic Haplaquolls
Shabliss	Loamy, mixed, mesic, shallow Haploxerollic Durorthids
Skullwak	Fine, montmorillonitic (calcareous), mesic Aeric Halaquepts
Slaven	Clayey-skeletal, montmorillonitic, frigid Aridic Argixerolls
Snapp	Clayey over sandy or sandy-skeletal, montmorillonitic, mesic Durixerollic Natrargids
Sodhouse	Loamy, mixed, mesic, shallow Typic Durorthids
Softscrabble	Loamy-skeletal, mixed, frigid Pachic Argixerolls
Sombrero	Loamy, mixed, mesic, shallow Aquentic Durorthids
Sonoma	Fine-silty, mixed (calcareous), mesic Aeric Fluvaquents
Sonoma Variant	Coarse-silty, mixed (calcareous), mesic Typic Fluvaquents
Soolake	Sandy, mixed, mesic Typic Torriorthents
Spike	Loamy-skeletal, mixed, mesic Typic Haplargids
Stingdorn	Loamy-skeletal, mixed, mesic, shallow Typic Durargids
Sumine	Loamy-skeletal, mixed, frigid Aridic Argixerolls
Susie Creek	Fine, montmorillonitic, frigid Durargidic Argixerolls
Teguro	Loamy, mixed, frigid Lithic Argixerolls
Teman	Fine-silty, mixed, mesic Durixerollic Calciorthids
Tenabo	Loamy, mixed, mesic, shallow Typic Nadurargids
Tessfive	Loamy, mixed (calcareous), mesic Lithic Xeric Torriorthents
Tomera	Fine, montmorillonitic, mesic Xerollic Natrargids
Trunk	Fine, montmorillonitic, mesic Xerollic Haplargids
Tulase	Coarse-silty, mixed (calcareous), mesic Durorthidic Xeric Torriorthents
Tusel	Loamy-skeletal, mixed Argic Pachic Cryoborolls
*Tweba	Coarse-loamy, mixed (calcareous), mesic Aeric Fluvaquents
Umberland	Fine, montmorillonitic (calcareous), mesic Aeric Halaquepts
Unsel Variant	Fine-loamy, mixed, mesic Duric Haplargids
Valmy	Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents
Vanwyper	Clayey-skeletal, montmorillonitic, mesic Xerollic Haplargids
Veta	Loamy-skeletal, mixed, mesic Xerollic Camborthids
Walti	Fine, montmorillonitic, frigid Aridic Argixerolls
*Welch	Fine-loamy, mixed, frigid Cumulic Haplaquolls
Wendane	Fine-silty, mixed (calcareous), mesic Aeric Halaquepts
Wendane Variant	Loamy-skeletal, mixed (calcareous), mesic Aeric Halaquepts
*Weso	Coarse-loamy, mixed, mesic Duric Camborthids
Whirlo	Loamy-skeletal, mixed, mesic Typic Camborthids
Wholan	Coarse-silty, mixed, mesic Typic Camborthids
Wieland	Fine, montmorillonitic, mesic Durixerollic Haplargids
Winada	Loamy-skeletal, mixed Argic Cryoborolls
Winada Variant	Loamy-skeletal, mixed Argic Cryoborolls
Wiskan	Loamy-skeletal, mixed, frigid Xerollic Haplargids
Xine	Loamy-skeletal, mixed, frigid Aridic Calcixerolls
Yipor	Coarse-silty, mixed (calcareous), mesic Typic Torriorthents
Zineb	Loamy-skeletal, mixed, mesic Durixerollic Camborthids
Zoesta	Fine, montmorillonitic, frigid Xerollic Paleargids
Zoesta Variant	Fine, montmorillonitic, mesic Xerollic Paleargids

Rangeland Plants and Woodland Understory

102--Beowawe Variant-Tomera-Whirlo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Beowawe Variant	Tomera	Whirlo	1	2
Thurber needlegrass	STTH2	10-20	20-50	---	10-20	20-50
Indian ricegrass	ORHY	5-15	---	5-15	5-15	---
Bottlebrush squirreltail	SIHY	2-10	---	5-15	2-10	---
Sandberg bluegrass	POSE	2-10	---	2-5	2-10	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	5-10
Needleandthread	STC04	---	---	1-3	---	---
Tapertip hawksbeard	CRAC2	1-2	2-4	---	1-2	2-4
Globemallow	SPHAE	1-2	---	---	1-2	---
Phlox	PHLOX	1-2	---	---	1-2	---
Balsamroot	BALSA	---	2-4	---	---	2-4
Other perennial forbs	PPFF	---	---	2-8	---	---
Wyoming big sagebrush	ARTRW*	30-35	15-20	---	30-35	15-20
Spiny hopsage	GRSP	5-15	2-5	2-5	5-15	2-5
Downy rabbitbrush	CHVIP	---	2-5	---	---	2-5
Shadscale	ATC0	---	---	30-40	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---
Winterfat	EULA5	---	---	2-5	---	---
Other shrubs	SSSS	---	2-10	---	---	2-10

Range site number	024X020N	024X005N	024X002N	024X020N	024X005N
Potential production (lb/acre):					
Favorable years	700	800	700	700	800
Normal years	450	600	450	450	600
Unfavorable years	300	400	300	300	400

112--Millerlux-Reluctan-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Millerlux	Reluctan	Cleavage	1	2	3	4
Bluebunch wheatgrass	AGSP	15-20	20-30	15-30	20-50	---	---	---
Thurber needlegrass	STTH2	15-20	2-10	2-10	2-5	---	---	---
Webber ricegrass	ORWE	5-10	---	---	---	---	5-10	---
Sandberg bluegrass	POSE	5-8	---	---	---	---	2-5	---
Pine bluegrass	POSC	5-8	---	---	---	---	2-5	---
Cusick bluegrass	POCU3	5-8	---	---	---	---	2-5	---
Idaho fescue	FEID	---	20-40	25-50	1-10	---	10-20	---
Basin wildrye	ELCI2	---	2-15	---	5-10	---	---	50-60
Spike fescue	HEKI	---	---	2-10	---	---	---	---
Mountain brome	BRMA4	---	---	---	2-15	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	2-5	---	5-10	---
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	---	---	15-20
Balsamroot	BALSA	2-5	---	2-5	---	---	---	---
Eriogonum	ERIOG	1-3	---	---	---	---	---	---
Phlox	PHLOX*	1-3	---	---	---	---	2-5	---
Tapertip hawksbeard	CRAC2	---	1-5	---	2-5	---	---	---
Arrowleaf balsamroot	BASA3	---	1-5	---	2-5	---	---	---
Goldenweed	HAPLO2	---	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	---	---	---	---	---	5-10
Low sagebrush	ARAR8	20-30	---	10-20	---	---	5-15	---
Mountain big sagebrush	ARTRV	---	5-15	---	5-15	---	---	---
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---	---	---
Black sagebrush	ARARN	---	---	---	---	---	5-15	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	---	10-15

Range site number	O24XO18N	24XO21N	O24XO27N	O24XO29N	None	O24XO16N	O25XO03N
Potential production (lb/acre):							
Favorable years	700	1,400	1,200	1,500	---	350	2,500
Normal years	500	1,000	800	1,100	---	250	1,900
Unfavorable years	300	700	600	800	---	150	1,200

120--Alyan-Graley-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Alyan	Graley	Rock outcrop	1	2
Bluebunch wheatgrass	AGSP	20-30	15-30	---	---	---
Thurber needlegrass	STTH2	15-25	T-10	---	---	---
Nevada bluegrass	PONE3	2-10	2-5	---	---	5-15
Idaho fescue	FEID	---	15-40	---	---	---
Basin wildrye	ELCI2	---	2-10	---	---	50-60
Indian ricegrass	ORHY	---	---	---	10-30	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---
Mat muhly	MURI	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	1-5
Other perennial grasses	PPGG	10-15	5-10	---	10-20	15-20
Tapertip hawksbeard	CRAC2	2-5	1-5	---	---	---
Arrowleaf balsamroot	BASA3	2-5	5-10	---	---	---
Other perennial forbs	PPFF	2-5	5-15	---	5-15	5-10
Big sagebrush	ARTR2	10-15	---	---	---	---
Mountain big sagebrush	ARTRV	---	10-15	---	---	---
Antelope bitterbrush	PUTR2	---	5-15	---	1-5	---
Downy rabbitbrush	CHVIP	---	---	---	1-5	---
Spiny hopsage	GRSP	---	---	---	1-5	---
Black sagebrush	ARARN	---	---	---	5-15	---
Purple sage	SACA9	---	---	---	T-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	10-25	---
Basin big sagebrush	ARTRT*	---	---	---	---	10-15
Other shrubs	SSSS	5-10	5-15	---	2-4	2-5
Range site number		025X014N	025X012N	None	025X025N	025X003N
Potential production (lb/acre):						
Favorable years		1,000	1,200	---	200	2,500
Normal years		800	900	---	150	1,900
Unfavorable years		600	600	---	100	1,200

130--Alley-Dewar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Alley	Dewar	1	2
Thurber needlegrass	STTH2	20-50	20-50	20-50	---
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	---
Balsamroot	BALSA	2-4	2-4	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---
Other shrubs	SSSS	2-10	2-10	2-10	---
Range site number		O24XO05N	O24XO05N	O24XO05N	None
Potential production (lb/acre):					
Favorable years		800	800	800	---
Normal years		600	600	600	---
Unfavorable years		400	400	400	---

131--Alley-Rock outcrop-Rubble land association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Alley	Rock outcrop	Rubble land	1	2
Thurber needlegrass	STTH2	20-50	---	---	20-50	20-50
Bluebunch wheatgrass	AGSP	5-10	---	---	5-10	5-10
Balsamroot	BALSA	2-4	---	---	2-4	2-4
Tapertip hawksbeard	CRAC2	2-4	---	---	2-4	2-4
Wyoming big sagebrush	ARTRW*	15-20	---	---	15-20	15-20
Downy rabbitbrush	CHVIP	2-5	---	---	2-5	2-5
Spiny hopsage	GRSP	2-5	---	---	2-5	2-5
Other shrubs	SSSS	2-10	---	---	2-10	2-10
Range site number		024X005N	None	None	024X005N	024X005N
Potential production (lb/acre):						
Favorable years		800	---	---	800	800
Normal years		600	---	---	600	600
Unfavorable years		400	---	---	400	400

140--Antel silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Antel	1	2
Bottlebrush squirreltail	SIHY	5-15	5-10	5-15
Indian ricegrass	ORHY	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	---	2-5
Needleandthread	STCO4	1-3	---	1-3
Other perennial grasses	PPGG	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-50	30-40
Bud sagebrush	ARSP5	20-30	5-15	20-30
Spiny hopsage	GRSP	2-5	---	2-5
Winterfat	EULA5	2-5	---	2-5
Black greasewood	SAVE4	---	15-30	---
Seepweed	SUAED	---	2-15	---
Range site number		O24XO02N	O24XO03N	O24XO02N
Potential production (lb/acre):				
Favorable years		700	600	700
Normal years		450	450	450
Unfavorable years		300	300	300

141--Antel silt loam, moderately sodic

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Antel	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	10-20
Sandberg bluegrass	POSE	2-5	2-5	---
Needleandthread	STCO4	1-3	1-3	---
Perennial forbs	PPFF	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	2-5
Spiny hopsage	GRSP	2-5	2-5	---
Winterfat	EULA5	2-5	2-5	60-70
Range site number		024X002N	024X002N	024X004N
Potential production (lb/acre):				
Favorable years		700	700	500
Normal years		450	450	350
Unfavorable years		300	300	200

142--Antel silty clay loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Antel	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5
Range site number		024X002N	024X002N	024X002N
Potential production (lb/acre):				
Favorable years		700	700	700
Normal years		450	450	450
Unfavorable years		300	300	300

143--Antel silty clay loam, occasionally flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Antel	1	2
Basin wildrye	ELCI2	50-60	---	---
Western wheatgrass	AGSM	5-15	---	---
Indian ricegrass	ORHY	---	10-20	5-15
Bottlebrush squirreltail	SIHY	---	2-10	2-10
Sandberg bluegrass	POSE	---	---	2-5
Globemallow	SPHAE	---	---	1-4
Phlox	PHLOX	---	---	1-4
Other perennial forbs	PPFF	2-8	2-8	---
Basin big sagebrush	ARTRT*	15-20	---	---
Black greasewood	SAVE4	2-10	---	---
Rubber rabbitbrush	CHNA2	2-5	---	---
Winterfat	EULA5	---	60-70	20-40
Bud sagebrush	ARSP5	---	2-5	20-30
Shadscale	ATCO	---	---	2-5
Range site number		024X006N	024X004N	024X014N
Potential production (lb/acre):				
Favorable years		1,500	500	400
Normal years		1,100	350	300
Unfavorable years		600	200	200

150--Argenta very fine sandy loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Argenta	1	2	3
Basin wildrye	ELCI2	5-15	---	2-5	40-60
Inland saltgrass	DIST	5-10	5-10	5-10	5-10
Wildrye	ELMYU	---	30-60	---	---
Nevada bluegrass	PONE3	---	5-10	---	---
Mat muhly	MURI	---	2-10	---	---
Arrowgrass	TRIGL	---	---	1-3	---
Alkali sacaton	SPAI	---	---	15-40	15-30
Alkali muhly	MUAS	---	---	10-20	---
Alkali bluegrass	POJU	---	---	5-15	---
Alkali cordgrass	SPGR	---	---	5-10	---
Other perennial grasses	PPGG	---	5-15	---	---
Sierra clover	TRWO	---	2-5	---	---
Other perennial forbs	PPFF	T-5	5-10	---	---
Black greasewood	SAVE4	60-75	---	T-2	5-15
Willow	SALIX	---	5-10	T-2	---
Basin big sagebrush	ARTRT*	---	2-5	---	---
Silver sagebrush	ARCA13	---	2-5	---	---
Silver buffaloberry	SHAR	---	---	T-2	---
Rubber rabbitbrush	CHNA2	---	---	T-2	1-2
Woods rose	ROWO	---	---	T-2	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2
Other shrubs	SSSS	---	2-8	---	---
Range site number		024X011N	025X001N	024X009N	024X007N
Potential production (lb/acre):					
Favorable years		500	3,000	1,500	1,900
Normal years		350	2,500	1,000	1,400
Unfavorable years		200	1,800	700	800

152--Argenta-Sonoma complex

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name		Inclusion number--
		Argenta	Sonoma	1
Basin wildrye	ELCI2	5-15	40-60	---
Inland saltgrass	DIST	5-10	5-10	5-10
Alkali sacaton	SPAI	---	15-30	---
Wildrye	ELMYU	---	---	30-60
Nevada bluegrass	PONE3	---	---	5-10
Mat muhly	MURI	---	---	2-10
Other perennial grasses	PPGG	---	---	5-15
Sierra clover	TRWO	---	---	2-5
Other perennial forbs	PPFF	T-5	---	5-10
Black greasewood	SAVE4	60-75	5-15	---
Alkali rabbitbrush	CHAL9	---	1-2	---
Rubber rabbitbrush	CHNA2	---	1-2	---
Willow	SALIX	---	---	5-10
Basin big sagebrush	ARTRT*	---	---	2-5
Silver sagebrush	ARCA13	---	---	2-5
Other shrubs	SSSS	---	---	2-8
Range site number		024X011N	024X007N	025X001N
Potential production (lb/acre):				
Favorable years		500	1,900	3,000
Normal years		350	1,400	2,500
Unfavorable years		200	800	1,800

160--Batan fine sandy loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Batan	1	2
Bottlebrush squirreltail	SIHY	5-10	5-10	5-15
Indian ricegrass	ORHY	---	---	5-15
Sandberg bluegrass	POSE	---	---	2-5
Needleandthread	STCO4	---	---	1-3
Other perennial grasses	PPGG	T-10	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8
Shadscale	ATCO	30-50	30-50	30-40
Black greasewood	SAVE4	15-30	15-30	---
Bud sagebrush	ARSP5	5-15	5-15	20-30
Seepweed	SUAED	2-15	2-15	---
Spiny hopsage	GRSP	---	---	2-5
Winterfat	EULA5	---	---	2-5
Range site number		O24XO03N	O24XO03N	O24XO02N
Potential production (lb/acre):				
Favorable years		600	600	700
Normal years		450	450	450
Unfavorable years		300	300	300

161--Batan silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Batan	1	2	3
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	---
Indian ricegrass	ORHY	---	---	10-30	---
Alkali sacaton	SPAI	---	---	T-5	15-30
Basin wildrye	ELCI2	---	---	---	40-60
Inland saltgrass	DIST	---	---	---	5-10
Other perennial grasses	PPGG	T-10	T-10	---	---
Perennial forbs	PPFF	2-8	2-8	T-5	---
Shadscale	ATCO	30-50	30-50	---	---
Black greasewood	SAVE4	15-30	15-30	---	5-15
Bud sagebrush	ARSP5	5-15	5-15	---	---
Seepweed	SUAED	2-15	2-15	---	---
Saltbush	ATRIP	---	---	50-65	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2
Rubber rabbitbrush	CHNA2	---	---	---	1-2
Range site number		024X003N	024X003N	024X012N	024X007N
Potential production (lb/acre):					
Favorable years		600	600	700	1,900
Normal years		450	450	400	1,400
Unfavorable years		300	300	200	800

162--Batan silt loam, occasionally flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Batan	1	2	3
Indian ricegrass	ORHY	10-20	5-15	5-15	10-20
Bottlebrush squirreltail	SIHY	2-10	2-10	5-15	2-10
Sandberg bluegrass	POSE	---	2-5	2-5	---
Needleandthread	STCO4	---	---	1-3	---
Globemallow	SPHAE	---	1-4	---	---
Phlox	PHLOX	---	1-4	---	---
Other perennial forbs	PPFF	2-8	---	2-8	2-8
Winterfat	EULA5	60-70	20-40	2-5	60-70
Bud sagebrush	ARSP5	2-5	20-30	20-30	2-5
Shadscale	ATCO	---	2-5	30-40	---
Spiny hopsage	GRSP	---	---	2-5	---
Range site number		024X004N	024X014N	024X002N	024X004N
Potential production (lb/acre):					
Favorable years		500	400	700	500
Normal years		350	300	450	350
Unfavorable years		200	200	300	200

163--Batan silt loam, slightly saline

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Batan	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	5-15	5-15
Indian ricegrass	ORHY	5-15	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	---	2-5	2-5
Needleandthread	STCO4	1-3	---	1-3	1-3
Other perennial grasses	PPGG	---	T-10	---	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-50	30-40	30-40
Bud sagebrush	ARSP5	20-30	5-15	20-30	20-30
Spiny hopsage	GRSP	2-5	---	2-5	2-5
Winterfat	EULA5	2-5	---	2-5	2-5
Black greasewood	SAVE4	---	15-30	---	---
Seepweed	SUAED	---	2-15	---	---
Range site number		024X002N	024X003N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	600	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

164--Batan-Raglan-Rosney association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Batan	Raglan	Rosney	1	2
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-15	---
Indian ricegrass	ORHY	---	---	10-30	5-15	---
Alkali sacaton	SPAI	---	---	T-5	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---
Needleandthread	STC04	---	---	---	1-3	---
Basin wildrye	ELCI2	---	---	---	---	50-60
Western wheatgrass	AGSM	---	---	---	---	5-15
Other perennial grasses	PPGG	T-10	T-10	---	---	---
Perennial forbs	PPFF	2-8	2-8	T-5	2-8	2-8
Shadscale	ATCO	30-50	30-50	---	30-40	---
Black greasewood	SAVE4	15-30	15-30	---	---	2-10
Bud sagebrush	ARSP5	5-15	5-15	---	20-30	---
Seepweed	SUAED	2-15	2-15	---	---	---
Saltbush	ATRIP	---	---	50-65	---	---
Spiny hopsage	GRSP	---	---	---	2-5	---
Winterfat	EULA5	---	---	---	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-20
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Range site number		O24XO03N	O24XO03N	O24XO12N	O24XO02N	O24XO06N
Potential production (lb/acre):						
Favorable years		600	600	700	700	1,500
Normal years		450	450	400	450	1,100
Unfavorable years		300	300	200	300	600

166--Batan-Wendane-Sonoma association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Batan	Wendane	Sonoma	1	2
Bottlebrush squirreltail	SIHY	5-10	---	---	---	2-5
Basin wildrye	ELCI2	---	40-60	---	50-60	5-20
Alkali sacaton	SPAI	---	15-30	---	---	---
Inland saltgrass	DIST	---	5-10	5-10	---	---
Wildrye	ELMYU	---	---	30-60	---	---
Nevada bluegrass	PONE3	---	---	5-10	---	---
Mat muhly	MURI	---	---	2-10	---	---
Western wheatgrass	AGSM	---	---	---	5-15	---
Indian ricegrass	ORHY	---	---	---	---	2-5
Other perennial grasses	PPGG	T-10	---	5-15	---	---
Sierra clover	TRWO	---	---	2-5	---	---
Thelypody	THELY	---	---	---	---	2-4
Other perennial forbs	PPFF	2-8	---	5-10	2-8	---
Shadscale	ATCO	30-50	---	---	---	---
Black greasewood	SAVE4	15-30	5-15	---	2-10	20-30
Bud sagebrush	ARSP5	5-15	---	---	---	---
Seepweed	SUAED	2-15	---	---	---	---
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---
Rubber rabbitbrush	CHNA2	---	1-2	---	2-5	---
Willow	SALIX	---	---	5-10	---	---
Basin big sagebrush	ARTRT*	---	---	2-5	15-20	5-15
Silver sagebrush	ARCA13	---	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	5-10
Spiny hopsage	GRSP	---	---	---	---	5-15
Other shrubs	SSSS	---	---	2-8	---	---
Range site number		024X003N	024X007N	025X001N	024X006N	024X022N
Potential production (lb/acre):						
Favorable years		600	1,900	3,000	1,500	800
Normal years		450	1,400	2,500	1,100	600
Unfavorable years		300	800	1,800	600	350

167--Batan-Wendane-Valmy association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Batan	Wendane	Valmy	1	2
Bottlebrush squirreltail	SIHY	5-10	---	2-5	5-10	---
Basin wildrye	ELCI2	---	20-40	5-20	---	50-60
Indian ricegrass	ORHY	---	---	2-5	---	---
Western wheatgrass	AGSM	---	---	---	---	5-15
Other perennial grasses	PPGG	T-10	---	---	T-10	---
Thelypody	THELY	---	---	2-4	---	---
Other perennial forbs	PPFF	2-8	2-8	---	2-8	2-8
Shadscale	ATCO	30-50	---	---	30-50	---
Black greasewood	SAVE4	15-30	5-15	20-30	15-30	2-10
Bud sagebrush	ARSP5	5-15	---	---	5-15	---
Seepweed	SUAED	2-15	---	---	2-15	---
Torrey quailbush	ATTO	---	30-50	---	---	---
Basin big sagebrush	ARTRT*	---	2-10	5-15	---	15-20
Wyoming big sagebrush	ARTRW*	---	---	5-10	---	---
Spiny hopsage	GRSP	---	---	5-15	---	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Range site number		O24XO03N	O24XO15N	O24XO22N	O24XO03N	O24XO06N
Potential production (lb/acre):						
Favorable years		600	1,500	800	600	1,500
Normal years		450	1,200	600	450	1,100
Unfavorable years		300	800	350	300	600

168--Batan-Bubus-Ocala association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Batan	Bubus	Ocala	1	2
Bottlebrush squirreltail	SIHY	5-10	5-10	---	---	5-15
Basin wildrye	ELCI2	---	---	40-60	50-60	---
Alkali sacaton	SPAI	---	---	15-30	---	---
Inland saltgrass	DIST	---	---	5-10	---	---
Western wheatgrass	AGSM	---	---	---	5-15	---
Indian ricegrass	ORHY	---	---	---	---	5-15
Sandberg bluegrass	POSE	---	---	---	---	2-5
Needleandthread	STCO4	---	---	---	---	1-3
Other perennial grasses	PPGG	T-10	T-10	---	---	---
Perennial forbs	PPFF	2-8	2-8	---	2-8	2-8
Shadscale	ATCO	30-50	30-50	---	---	30-40
Black greasewood	SAVE4	15-30	15-30	5-15	2-10	---
Bud sagebrush	ARSP5	5-15	5-15	---	---	20-30
Seepweed	SUAED	2-15	2-15	---	---	---
Alkali rabbitbrush	CHAL9	---	---	1-2	---	---
Rubber rabbitbrush	CHNA2	---	---	1-2	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	15-20	---
Spiny hopsage	GRSP	---	---	---	---	2-5
Winterfat	EULA5	---	---	---	---	2-5
Range site number		O24XO03N	O24XO03N	O24XO07N	O24XO06N	O24XO02N
Potential production (lb/acre):						
Favorable years		600	600	1,900	1,500	700
Normal years		450	450	1,400	1,100	450
Unfavorable years		300	300	800	600	300

169--Batan-Ocala-Ocala, rarely flooded, association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Batan	Ocala	Ocala, rarely flooded	1	2	3
Bottlebrush squirreltail	SIHY	5-10	---	---	---	---	2-10
Basin wildrye	ELCI2	---	40-60	5-15	50-60	---	---
Alkali sacaton	SPAI	---	15-30	---	---	---	---
Inland saltgrass	DIST	---	5-10	5-10	---	---	---
Western wheatgrass	AGSM	---	---	---	5-15	---	---
Thurber needlegrass	STTH2	---	---	---	---	---	10-20
Indian ricegrass	ORHY	---	---	---	---	---	5-15
Sandberg bluegrass	POSE	---	---	---	---	---	2-10
Other perennial grasses	PPGG	T-10	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	---	1-2
Globemallow	SPHAE	---	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	---	T-5	2-8	---	---
Shadscale	ATCO	30-50	---	---	---	---	---
Black greasewood	SAVE4	15-30	5-15	60-75	2-10	---	---
Bud sagebrush	ARSP5	5-15	---	---	---	---	---
Seepweed	SUAED	2-15	---	---	---	---	---
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---	---
Rubber rabbitbrush	CHNA2	---	1-2	---	2-5	---	---
Basin big sagebrush	ARTRT*	---	---	---	15-20	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	---	30-35
Spiny hopsage	GRSP	---	---	---	---	---	5-15
Range site number		024X003N	024X007N	024X011N	024X006N	None	024X020N
Potential production (lb/acre):							
Favorable years		600	1,900	500	1,500	---	700
Normal years		450	1,400	350	1,100	---	450
Unfavorable years		300	800	200	600	---	300

170--Beoska silt loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Beoska	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5
Range site number		O24XO02N	O24XO02N	O24XO02N	O24XO02N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

171--Beoska silt loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Beoska	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-10
Needleandthread	STCO4	1-3	1-3	1-3	1-3	---
Thurber needlegrass	STTH2	---	---	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2
Globemallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	2-5	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35
Range site number		O24XOO2N	O24XOO2N	O24XOO2N	O24XOO2N	O24XO2ON
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

172--Beoska-Tenabo silt loams, nearly level

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Beoska	Tenabo	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-10	2-5
Needleandthread	STCO4	1-3	1-3	---	1-3
Thurber needlegrass	STTH2	---	---	10-20	---
Tapertip hawksbeard	CRAC2	---	---	1-2	---
Globemallow	SPHAE	---	---	1-2	---
Phlox	PHLOX	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	---	20-30
Spiny hopsage	GRSP	2-5	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	30-35	---
Range site number		024X002N	024X002N	024X020N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

173--Beoska-Tenabo silt loams, sloping

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Beoska	Tenabo	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10
Needleandthread	STCO4	1-3	1-3	1-3	---
Thurber needlegrass	STTH2	---	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	---	1-2
Globemallow	SPHAE	---	---	---	1-2
Phlox	PHLOX	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	30-35
Range site number		024X002N	024X002N	024X002N	024X020N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

174--Beoska-Chiara association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Beoska	Chiara	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	2-10	---	5-15
Indian ricegrass	ORHY	5-15	---	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	---	2-10	---	2-5
Needleandthread	STCO4	1-3	---	---	---	1-3
Thurber needlegrass	STTH2	---	20-50	10-20	---	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---
Basin wildrye	ELCI2	---	---	---	30-50	---
Nevada bluegrass	PONE3	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	2-5	---
Other perennial grasses	PPGG	---	---	---	15-25	---
Balsamroot	BALSA	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	1-2	---	---
Globemallow	SPHAE	---	---	1-2	---	---
Phlox	PHLOX	---	---	1-2	---	---
Other perennial forbs	PPFF	2-8	---	---	2-5	2-8
Shadscale	ATCO	30-40	---	---	---	30-40
Bud sagebrush	ARSP5	20-30	---	---	---	20-30
Spiny hopsage	GRSP	2-5	2-5	5-15	---	2-5
Winterfat	EULA5	2-5	---	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	15-20	30-35	---	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	5-10	---
Other shrubs	SSSS	---	2-10	---	5-10	---
Range site number		O24XO02N	O24XO05N	O24XO20N	O28BO03N	O24XO02N
Potential production (lb/acre):						
Favorable years		700	800	700	2,600	700
Normal years		450	600	450	1,250	450
Unfavorable years		300	400	300	800	300

175--Beoska-Jenor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Beoska	Jenor	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	---	1-3	1-3
Globemallow	SPHAE	---	---	1-4	---	---
Phlox	PHLOX	---	---	1-4	---	---
Other perennial forbs	PPFF	2-8	2-8	---	2-8	2-8
Shadscale	ATCO	30-40	30-40	2-5	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	---	2-5	2-5
Winterfat	EULA5	2-5	2-5	20-40	2-5	2-5
Range site number		024X002N	024X002N	024X014N	024X002N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	400	700	700
Normal years		450	450	300	450	450
Unfavorable years		300	300	200	300	300

177--Beoska-Oxcorel-McConnel association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Beoska	Oxcorel	McConnel	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-10	2-5	2-5	2-10
Needleandthread	STCO4	1-3	1-3	---	1-3	1-3	---
Thurber needlegrass	STTH2	---	---	10-20	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	1-2	---	---	1-2
Globemallow	SPHAE	---	---	1-2	---	---	1-2
Phlox	PHLOX	---	---	1-2	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	---	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	---	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	---	20-30	20-30	---
Spiny hopsage	GRSP	2-5	2-5	5-15	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	---	2-5	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	30-35	---	---	30-35
Range site number		024X002N	024X002N	024X020N	024X002N	024X002N	024X020N
Potential production (lb/acre):							
Favorable years		700	700	700	700	700	700
Normal years		450	450	450	450	450	450
Unfavorable years		300	300	300	300	300	300

178--Beoska-Malpais-Old Camp association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Beoska	Malpais	Old Camp	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	2-10	---	2-10	---	5-10	---
Indian ricegrass	ORHY	5-15	2-10	---	5-15	---	10-30	---
Sandberg bluegrass	POSE	2-5	2-5	---	2-10	---	---	---
Needleandthread	STCO4	1-3	---	---	---	---	---	---
Webber ricegrass	ORWE	---	2-10	---	---	---	---	---
Thurber needlegrass	STTH2	---	2-5	20-50	10-20	---	---	---
Desert needlegrass	STSP3	---	2-5	---	---	---	---	---
Pine bluegrass	POSC	---	2-5	---	---	---	---	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---	---	---	---
Other perennial grasses	PPGG	---	---	---	---	---	10-20	---
Eriogonum	ERIOG	---	1-2	---	---	---	---	---
Hawksbeard	CREPI	---	1-2	---	---	---	---	---
Balsamroot	BALSA	---	---	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	2-4	1-2	---	---	---
Globemallow	SPHAE	---	---	---	1-2	---	---	---
Phlox	PHLOX	---	---	---	1-2	---	---	---
Other perennial forbs	PPFF	2-8	---	---	---	---	5-15	---
Shadscale	ATCO	30-40	10-25	---	---	---	---	---
Bud sagebrush	ARSP5	20-30	2-5	---	---	---	---	---
Spiny hopsage	GRSP	2-5	5-15	2-5	5-15	---	1-5	---
Winterfat	EULA5	2-5	---	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	10-25	15-20	30-35	---	10-25	---
Downy rabbitbrush	CHVIP	---	2-5	2-5	---	---	1-5	---
Antelope bitterbrush	PUTR2	---	---	---	---	---	1-5	---
Black sagebrush	ARARN	---	---	---	---	---	5-15	---
Purple sage	SACA9	---	---	---	---	---	T-5	---
Other shrubs	SSSS	---	---	2-10	---	---	2-4	---
Range site number		024X002N	024X026N	024X005N	024X020N	None	025X025N	None
Potential production (lb/acre):								
Favorable years		700	400	800	700	---	200	---
Normal years		450	300	600	450	---	150	---
Unfavorable years		300	200	400	300	---	100	---

181--Beoska-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Beoska	Orovada	1	2	3
Bottlebrush squirreltail	SIHY	5-15	2-10	2-10	---	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-10	2-10	---	2-5
Needleandthread	STCO4	1-3	---	---	---	1-3
Thurber needlegrass	STTH2	---	10-20	10-20	20-50	---
Bluebunch wheatgrass	AGSP	---	---	---	5-10	---
Tapertip hawksbeard	CRAC2	---	1-2	1-2	2-4	---
Globemallow	SPHAE	---	1-2	1-2	---	---
Phlox	PHLOX	---	1-2	1-2	---	---
Balsamroot	BALSA	---	---	---	2-4	---
Other perennial forbs	PPFF	2-8	---	---	---	2-8
Shadscale	ATCO	30-40	---	---	---	30-40
Bud sagebrush	ARSP5	20-30	---	---	---	20-30
Spiny hopsage	GRSP	2-5	5-15	5-15	2-5	2-5
Winterfat	EULA5	2-5	---	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	30-35	30-35	15-20	---
Downy rabbitbrush	CHVIP	---	---	---	2-5	---
Other shrubs	SSSS	---	---	---	2-10	---
Range site number		O24XO02N	O24XO20N	O24XO20N	O24XO05N	O24XO02N
Potential production (lb/acre):						
Favorable years		700	700	700	800	700
Normal years		450	450	450	600	450
Unfavorable years		300	300	300	400	300

182--Beoska-Whirlo-Misad association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Beoska	Whirlo	Misad	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-5
Needleandthread	STCO4	1-3	1-3	1-3	---	1-3
Thurber needlegrass	STTH2	---	---	---	10-20	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	2-5	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	---
Range site number		O24XOO2N	O24XOO2N	O24XOO2N	O24XO2ON	O24XOO2N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

183--Beoska-Dewar-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Beoska	Dewar	Orovada	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	5-10	5-15	---	---
Indian ricegrass	ORHY	5-15	---	20-30	5-15	---	15-30
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	---	---
Needleandthread	STCO4	1-3	---	10-20	1-3	---	---
Thurber needlegrass	STTH2	---	20-50	---	---	20-50	5-10
Bluebunch wheatgrass	AGSP	---	5-10	---	---	5-10	---
Galleta	HIJA	---	---	---	---	---	T-2
Other perennial grasses	PPGG	---	---	---	---	---	5-15
Balsamroot	BALSA	---	2-4	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	2-4	---
Globemallow	SPHAE	---	---	---	---	---	2-4
Other perennial forbs	PPFF	2-8	---	2-5	2-8	---	---
Shadscale	ATCO	30-40	---	---	30-40	---	2-5
Bud sagebrush	ARSP5	20-30	---	---	20-30	---	---
Spiny hopsage	GRSP	2-5	2-5	---	2-5	2-5	2-5
Winterfat	EULA5	2-5	---	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	---	15-20	15-30
Downy rabbitbrush	CHVIP	---	2-5	---	---	2-5	---
Other shrubs	SSSS	---	2-10	5-15	---	2-10	2-5
Range site number		O24XOO2N	O24XOO5N	O28BO10N	O24XOO2N	O24XOO5N	O24XO45N
Potential production (lb/acre):							
Favorable years		700	800	800	700	800	350
Normal years		450	600	600	450	600	200
Unfavorable years		300	400	400	300	400	100

185--Beowawe silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Beowawe	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Needleandthread	STC04	1-3	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5
Range site number		024X002N	024X002N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

192--Vanwyper-Trunk-Trunk, steep, association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Vanwyper	Trunk	Trunk, steep	1	2	3	4
Bluebunch wheatgrass	AGSP	40-60	5-10	5-10	---	15-30	---	---
Thurber needlegrass	STTH2	5-10	20-50	20-50	---	T-10	---	---
Bluegrass	POA++	2-10	---	---	---	---	---	---
Basin wildrye	ELCI2	2-5	---	---	---	2-10	---	---
Idaho fescue	FEID	---	---	---	---	15-40	---	---
Nevada bluegrass	PONE3	---	---	---	---	2-5	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	5-10	5-15
Indian ricegrass	ORHY	---	---	---	---	---	---	5-15
Sandberg bluegrass	POSE	---	---	---	---	---	---	2-5
Needleandthread	STCO4	---	---	---	---	---	---	1-3
Other perennial grasses	PPGG	---	---	---	---	5-10	T-10	---
Tapertip hawksbeard	CRAC2	2-5	2-4	2-4	---	1-5	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	---	5-10	---	---
Balsamroot	BALSA	---	2-4	2-4	---	---	---	---
Other perennial forbs	PPFF	---	---	---	---	5-15	2-8	2-8
Wyoming big sagebrush	ARTRW*	5-10	15-20	15-20	---	----	---	---
Mountain big sagebrush	ARTRV	T-5	---	---	---	10-15	---	---
Downy rabbitbrush	CHVIP	---	2-5	2-5	---	---	---	---
Spiny hopsage	GRSP	---	2-5	2-5	---	----	---	2-5
Antelope bitterbrush	PUTR2	---	---	---	---	5-15	---	---
Shadscale	ATCO	---	---	---	---	---	30-50	30-40
Black greasewood	SAVE4	---	---	---	---	---	15-30	---
Bud sagebrush	ARSP5	---	---	---	---	---	5-15	20-30
Seepweed	SUAED	---	---	---	---	---	2-15	---
Winterfat	EULA5	---	---	---	---	---	---	2-5
Other shrubs	SSSS	---	2-10	2-10	---	5-15	---	---
Range site number		024X028N	024X005N	024X005N	None	025X012N	024X003N	024X002N
Potential production (lb/acre):								
Favorable years		1,000	800	800	---	1,200	600	700
Normal years		700	600	600	---	900	450	450
Unfavorable years		500	400	400	---	600	300	300

193--Berning-Alley association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Berning	Alley	1	2
Thurber needlegrass	STTH2	20-50	20-50	2-5	10-20
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	2-10	2-10
Indian ricegrass	ORHY	---	---	2-10	5-15
Webber ricegrass	ORWE	---	---	2-10	---
Desert needlegrass	STSP3	---	---	2-5	---
Sandberg bluegrass	POSE	---	---	2-5	2-10
Pine bluegrass	POSC	---	---	2-5	---
Balsamroot	BALSA	2-4	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	1-2
Eriogonum	ERIOG	---	---	1-2	---
Hawksbeard	CREPI	---	---	1-2	---
Globemallow	SPHAE	---	---	---	1-2
Phlox	PHLOX	---	---	---	1-2
Wyoming big sagebrush	ARTRW*	15-20	15-20	10-25	30-35
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---
Spiny hopsage	GRSP	2-5	2-5	5-15	5-15
Shadscale	ATCO	---	---	10-25	---
Bud sagebrush	ARSP5	---	---	2-5	---
Other shrubs	SSSS	2-10	2-10	---	---
Range site number		024X005N	024X005N	024X026N	024X020N
Potential production (lb/acre):					
Favorable years		800	800	400	700
Normal years		600	600	300	450
Unfavorable years		400	400	200	300

200--Sonoma Variant silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions	
		Soil name	Inclusion number--
		Sonoma Variant	1
Alkali bluegrass	POJU	30-50	---
Alkali sacaton	SPAI	5-20	15-30
Baltic rush	JUBA	5-15	---
Inland saltgrass	DIST	5-15	5-10
Arrowgrass	TRIGL	2-5	---
Basin wildrye	ELCI2	---	40-60
Cinquefoil	POTEN	2-5	---
Black greasewood	SAVE4	---	5-15
Alkali rabbitbrush	CHAL9	---	1-2
Rubber rabbitbrush	CHNA2	---	1-2
Range site number		024X043N	024X007N
Potential production (lb/acre):			
Favorable years		3,000	1,900
Normal years		2,000	1,400
Unfavorable years		1,000	800

202--Bioya-Chiara-Cortez association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Bioya	Chiara	Cortez	1	2
Thurber needlegrass	STTH2	20-50	20-50	20-50	20-50	---
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	5-10	---
Basin wildrye	ELCI2	---	---	---	---	50-60
Western wheatgrass	AGSM	---	---	---	---	5-15
Balsamroot	BALSA	2-4	2-4	2-4	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	2-4	---
Other perennial forbs	PPFF	---	---	---	---	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	2-5	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-20
Black greasewood	SAVE4	---	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Other shrubs	SSSS	2-10	2-10	2-10	2-10	---
Range site number		024X005N	024X005N	024X005N	024X005N	024X006N
Potential production (lb/acre):						
Favorable years		800	800	800	800	1,500
Normal years		600	600	600	600	1,100
Unfavorable years		400	400	400	400	600

203--Bioya-Shabliss-Puett association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Bioya	Shabliss	Puett	1	2	3	4
Thurber needlegrass	STTH2	20-50	20-50	---	---	20-50	---	20-50
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---	5-10	---	5-10
Indian ricegrass	ORHY	---	---	10-30	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---	---	---
Basin wildrye	ELCI2	---	---	---	---	---	50-60	---
Western wheatgrass	AGSM	---	---	---	---	---	5-15	---
Other perennial grasses	PPGG	---	---	10-20	---	---	---	---
Balsamroot	BALSA	2-4	2-4	---	---	2-4	---	2-4
Tapertip hawksbeard	CRAC2	2-4	2-4	---	---	2-4	---	2-4
Other perennial forbs	PPFF	---	---	5-15	---	---	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	10-25	---	15-20	---	15-20
Downy rabbitbrush	CHVIP	2-5	2-5	1-5	---	2-5	---	2-5
Spiny hopsage	GRSP	2-5	2-5	1-5	---	2-5	---	2-5
Antelope bitterbrush	PUTR2	---	---	1-5	---	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	---	---
Purple sage	SACA9	---	---	T-5	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	15-20	---
Black greasewood	SAVE4	---	---	---	---	---	2-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5	---
Other shrubs	SSSS	2-10	2-10	2-4	---	2-10	---	2-10
Range site number		024X005N	024X005N	025X025N	None	024X005N	024X006N	024X005N
Potential production (lb/acre):								
Favorable years		800	800	200	---	800	1,500	800
Normal years		600	600	150	---	600	1,100	600
Unfavorable years		400	400	100	---	400	600	400

211--Blacka very fine sandy loam, 0 to 2 percent slopes

Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Blacka	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	10-20
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	---
Needleandthread	STCO4	1-3	1-3	1-3	1-3	---
Thurber needlegrass	STTH2	---	---	---	---	---
Papertip hawksbeard	CRAC2	---	---	---	---	---
Globemallow	SPHAE	---	---	---	---	---
Phlox	PHLOX	---	---	---	---	---
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	---
Winterfat	EULA5	2-5	2-5	2-5	2-5	60-70
Wyoming big sagebrush	ARTRW*	---	---	---	---	---
Range site number		024X002N	024X002N	024X002N	024X002N	024X004N
Potential production (lb/acre):						
Favorable years		700	700	700	700	500
Normal years		450	450	450	450	350
Unfavorable years		300	300	300	300	200

212--Blacka-Broyles very fine sandy loams, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Blacka	Broyles	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	5-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	---
Needleandthread	STCO4	1-3	1-3	1-3	---	---
Thurber needlegrass	STTH2	---	---	---	10-20	---
Other perennial grasses	PPGG	---	---	---	---	T-10
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	30-40	---	30-50
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	5-15
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	---
Winterfat	EULA5	2-5	2-5	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	---
Black greasewood	SAVE4	---	---	---	---	15-30
Seepweed	SUAED	---	---	---	---	2-15
Range site number		024X002N	024X002N	024X002N	024X020N	024X003N
Potential production (lb/acre):						
Favorable years		700	700	700	700	600
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

213--Blacka-Broyles very fine sandy loams, saline, 2 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Blacka	Broyles	1	2	3
Bottlebrush squirreltail	SIHY	5-10	5-10	5-15	5-15	2-10
Indian ricegrass	ORHY	---	---	5-15	5-15	10-20
Sandberg bluegrass	POSE	---	---	2-5	2-5	---
Needleandthread	STCO4	---	---	1-3	1-3	---
Other perennial grasses	PPGG	T-10	T-10	---	---	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-50	30-50	30-40	30-40	---
Black greasewood	SAVE4	15-30	15-30	---	---	---
Bud sagebrush	ARSP5	5-15	5-15	20-30	20-30	2-5
Seepweed	SUAED	2-15	2-15	---	---	---
Spiny hopsage	GRSP	---	---	2-5	2-5	---
Winterfat	EULA5	---	---	2-5	2-5	60-70
Range site number		024X003N	024X003N	024X002N	024X002N	024X004N
Potential production (lb/acre):						
Favorable years		600	600	700	700	500
Normal years		450	450	450	450	350
Unfavorable years		300	300	300	300	200

220--Blackhawk very fine sandy loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Blackhawk	1	2	3
Bottlebrush squirreltail	SIHY	5-15	2-5	5-10	2-10
Indian ricegrass	ORHY	5-15	2-5	---	5-15
Sandberg bluegrass	POSE	2-5	---	---	2-10
Needleandthread	STCO4	1-3	2-5	---	---
Basin wildrye	ELCI2	---	10-20	---	---
Thurber needlegrass	STTH2	---	---	---	10-20
Other perennial grasses	PPGG	---	5-10	T-10	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2
Globemallow	SPHAE	---	---	---	1-2
Phlox	PHLOX	---	---	---	1-2
Other perennial forbs	PPFF	2-8	5-10	2-8	---
Shadscale	ATCO	30-40	---	30-50	---
Bud sagebrush	ARSP5	20-30	---	5-15	---
Spiny hopsage	GRSP	2-5	---	---	5-15
Winterfat	EULA5	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	10-15	---	---
Greene rabbitbrush	CHGR6	---	2-5	---	---
Nevada ephedra	EPNE	---	2-5	---	---
Fourwing saltbush	ATCA2	---	2-5	---	---
Black greasewood	SAVE4	---	---	15-30	---
Seepweed	SUAED	---	---	2-15	---
Wyoming big sagebrush	ARTRW*	---	---	---	30-35
Other shrubs	SSSS	---	5-10	---	---
Range site number		024X002N	028B009N	024X003N	024X020N
Potential production (lb/acre):					
Favorable years		700	700	600	700
Normal years		450	400	450	450
Unfavorable years		300	300	300	300

230--Broyles very fine sandy loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Broyles	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	2-5	2-5
Needleandthread	STCO4	1-3	1-3	---	1-3	1-3
Other perennial grasses	PPGG	---	---	T-10	---	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-50	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	5-15	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	---	2-5	2-5
Winterfat	EULA5	2-5	2-5	---	2-5	2-5
Black greasewood	SAVE4	---	---	15-30	---	---
Seepweed	SUAED	---	---	2-15	---	---
Range site number		024X002N	024X002N	024X003N	024X002N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	600	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

231--Broyles very fine sandy loam, 2 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Broyles	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10
Needleandthread	STCO4	1-3	1-3	1-3	---
Thurber needlegrass	STTH2	---	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	---	1-2
Globemallow	SPHAE	---	---	---	1-2
Phlox	PHLOX	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	30-35
Range site number		024X002N	024X002N	024X002N	024X020N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

232--Broyles very fine sandy loam, cemented substratum, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Broyles	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	5-15	5-15
Indian ricegrass	ORHY	5-15	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	---	2-5	2-5
Needleandthread	STCO4	1-3	---	1-3	1-3
Other perennial grasses	PPGG	---	T-10	---	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-50	30-40	30-40
Bud sagebrush	ARSP5	20-30	5-15	20-30	20-30
Spiny hopsage	GRSP	2-5	---	2-5	2-5
Winterfat	EULA5	2-5	---	2-5	2-5
Black greasewood	SAVE4	---	15-30	---	---
Seepweed	SUAED	---	2-15	---	---
Range site number		024X002N	024X003N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	600	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

233--Broyles very fine sandy loam, moderately saline, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Broyles	1	2	3
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10
Other perennial grasses	PPGG	T-10	T-10	T-10	T-10
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-50	30-50	30-50	30-50
Black greasewood	SAVE4	15-30	15-30	15-30	15-30
Bud sagebrush	ARSP5	5-15	5-15	5-15	5-15
Seepweed	SUAED	2-15	2-15	2-15	2-15
Range site number		024X003N	024X003N	024X003N	024X003N
Potential production (lb/acre):					
Favorable years		600	600	600	600
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

235--Broyles-Creemon association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Broyles	Creemon	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	2-5	2-10
Needleandthread	STCO4	1-3	1-3	---	1-3	---
Thurber needlegrass	STTH2	---	---	---	---	10-20
Other perennial grasses	PPGG	---	---	T-10	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2
Globemallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	30-50	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	5-15	20-30	---
Spiny hopsage	GRSP	2-5	2-5	---	2-5	5-15
Winterfat	EULA5	2-5	2-5	---	2-5	---
Black greasewood	SAVE4	---	---	15-30	---	---
Seepweed	SUAED	---	---	2-15	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35
Range site number		O24XOO2N	O24XOO2N	O24XOO3N	O24XOO2N	O24XO20N
Potential production (lb/acre):						
Favorable years		700	700	600	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

237--Broyles-Beoska-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Broyles	Beoska	Orovada	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-10	2-10	2-5
Needleandthread	STCO4	1-3	1-3	---	---	1-3
Thurber needlegrass	STTH2	---	---	10-20	10-20	---
Tapertip hawksbeard	CRAC2	---	---	1-2	1-2	---
Globemallow	SPHAE	---	---	1-2	1-2	---
Phlox	PHLOX	---	---	1-2	1-2	---
Other perennial forbs	PPFF	2-8	2-8	---	---	2-8
Shadscale	ATCO	30-40	30-40	---	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	---	---	20-30
Spiny hopsage	GRSP	2-5	2-5	5-15	5-15	2-5
Winterfat	EULA5	2-5	2-5	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	30-35	30-35	---
Range site number		024X002N	024X002N	024X020N	024X020N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

240--Bubus very fine sandy loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Bubus	1	2	3
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	---
Indian ricegrass	ORHY	---	---	10-30	---
Alkali sacaton	SPAI	---	---	T-5	---
Other perennial grasses	PPGG	T-10	T-10	---	---
Perennial forbs	PPFF	2-8	2-8	T-5	---
Shadscale	ATCO	30-50	30-50	---	---
Black greasewood	SAVE4	15-30	15-30	---	---
Bud sagebrush	ARSP5	5-15	5-15	---	---
Seepweed	SUAED	2-15	2-15	---	---
Saltbush	ATRIP	---	---	50-65	---
Range site number		O24XOO3N	O24XOO3N	O24XO12N	None
Potential production (lb/acre):					
Favorable years		600	600	700	---
Normal years		450	450	400	---
Unfavorable years		300	300	200	---

242--Bubus very fine sandy loam, gravelly substratum

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Bubus	1	2	3
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	---
Other perennial grasses	PPGG	T-10	T-10	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8	---
Shadscale	ATCO	30-50	30-50	30-50	---
Black greasewood	SAVE4	15-30	15-30	15-30	---
Bud sagebrush	ARSP5	5-15	5-15	5-15	---
Seepweed	SUAED	2-15	2-15	2-15	---
Range site number		024X003N	024X003N	024X003N	None
Potential production (lb/acre):					
Favorable years		600	600	600	---
Normal years		450	450	450	---
Unfavorable years		300	300	300	---

243--Bubus-Playas complex

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Bubus	Playas	1	2
Bottlebrush squirreltail	SIHY	5-10	---	5-10	5-10
Indian ricegrass	ORHY	---	---	---	10-30
Alkali sacaton	SPAI	---	---	---	T-5
Other perennial grasses	PPGG	T-10	---	T-10	---
Perennial forbs	PPFF	2-8	---	2-8	T-5
Shadscale	ATCO	30-50	---	30-50	---
Black greasewood	SAVE4	15-30	---	15-30	---
Bud sagebrush	ARSP5	5-15	---	5-15	---
Seepweed	SUAED	2-15	---	2-15	---
Saltbush	ATRIP	---	---	---	50-65
Range site number		024X003N	None	024X003N	024X012N
Potential production (lb/acre):					
Favorable years		600	---	600	700
Normal years		450	---	450	400
Unfavorable years		300	---	300	200

244--Bubus-Relley complex

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Bubus	Relley	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	10-20
Sandberg bluegrass	POSE	2-5	2-5	2-5	---
Needleandthread	STCO4	1-3	1-3	1-3	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5	---
Winterfat	EULA5	2-5	2-5	2-5	60-70
Range site number		024X002N	024X002N	024X002N	024X004N
Potential production (lb/acre):					
Favorable years		700	700	700	500
Normal years		450	450	450	350
Unfavorable years		300	300	300	200

245--Bubus-Needle Peak-Yipor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Bubus	Needle Peak	Yipor	1	2
Bottlebrush squirreltail	SIHY	5-10	---	5-10	5-10	5-10
Basin wildrye	ELCI2	---	50-60	---	---	---
Western wheatgrass	AGSM	---	5-15	---	---	---
Indian ricegrass	ORHY	---	---	10-30	---	---
Alkali sacaton	SPAI	---	---	T-5	---	---
Other perennial grasses	PPGG	T-10	---	---	T-10	T-10
Perennial forbs	PPFF	2-8	2-8	T-5	2-8	2-8
Shadscale	ATCO	30-50	---	---	30-50	30-50
Black greasewood	SAVE4	15-30	2-10	---	15-30	15-30
Bud sagebrush	ARSP5	5-15	---	---	5-15	5-15
Seepweed	SUAED	2-15	---	---	2-15	2-15
Basin big sagebrush	ARTRT*	---	15-20	---	---	---
Rubber rabbitbrush	CHNA2	---	2-5	---	---	---
Saltbush	ATRIP	---	---	50-65	---	---
Range site number		O24XO03N	O24XO06N	O24XO12N	O24XO03N	O24XO03N
Potential production (lb/acre):						
Favorable years		600	1,500	700	600	600
Normal years		450	1,100	400	450	450
Unfavorable years		300	600	200	300	300

247--Bubus-Isolde association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Bubus	Isolde	1	2	3
Bottlebrush squirreltail	SIHY	5-10	---	5-10	---	---
Indian ricegrass	ORHY	---	10-20	---	---	---
Needleandthread	STCO4	---	5-10	---	---	---
Basin wildrye	ELCI2	---	---	---	5-15	40-60
Inland saltgrass	DIST	---	---	---	5-10	5-10
Alkali sacaton	SPAI	---	---	---	---	15-30
Other perennial grasses	PPGG	T-10	2-5	T-10	---	---
Perennial forbs	PPFF	2-8	2-5	2-8	T-5	---
Shadscale	ATCO	30-50	---	30-50	---	---
Black greasewood	SAVE4	15-30	10-40	15-30	60-75	5-15
Bud sagebrush	ARSP5	5-15	---	5-15	---	---
Seepweed	SUAED	2-15	---	2-15	---	---
Alkali rabbitbrush	CHAL9	---	---	---	---	1-2
Rubber rabbitbrush	CHNA2	---	---	---	---	1-2
Other shrubs	SSSS	---	5-20	---	---	---
Range site number		024X003N	027X016N	024X003N	024X011N	024X007N
Potential production (lb/acre):						
Favorable years		600	300	600	500	1,900
Normal years		450	200	450	350	1,400
Unfavorable years		300	50	300	200	800

248--Bubus-Batan-Reese association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Bubus	Batan	Reese	1	2
Bottlebrush squirreltail	SIHY	5-10	5-10	---	5-10	---
Basin wildrye	ELCI2	---	---	5-15	---	50-60
Inland saltgrass	DIST	---	---	5-10	---	---
Western wheatgrass	AGSM	---	---	---	---	5-15
Other perennial grasses	PPGG	T-10	T-10	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	T-5	2-8	2-8
Shadscale	ATCO	30-50	30-50	---	30-50	---
Black greasewood	SAVE4	15-30	15-30	60-75	15-30	2-10
Bud sagebrush	ARSP5	5-15	5-15	---	5-15	---
Seepweed	SUAED	2-15	2-15	---	2-15	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-20
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Range site number		024X003N	024X003N	024X011N	024X003N	024X006N
Potential production (lb/acre):						
Favorable years		600	600	500	600	1,500
Normal years		450	450	350	450	1,100
Unfavorable years		300	300	200	300	600

251--Bucan-Bucan, steep, association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Bucan	Bucan, steep	1	2
Thurber needlegrass	STTH2	20-50	5-10	20-50	---
Bluebunch wheatgrass	AGSP	5-10	40-60	5-10	---
Bluegrass	POA++	---	2-10	---	---
Basin wildrye	ELCI2	---	2-5	---	---
Balsamroot	BALSA	2-4	---	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-5	2-4	---
Arrowleaf balsamroot	BASA3	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	15-20	5-10	15-20	---
Downy rabbitbrush	CHVIP	2-5	---	2-5	---
Spiny hopsage	GRSP	2-5	---	2-5	---
Mountain big sagebrush	ARTRV	---	T-5	---	---
Other shrubs	SSSS	2-10	---	2-10	---
Range site number		024X005N	024X028N	024X005N	None
Potential production (lb/acre):					
Favorable years		800	1,000	800	---
Normal years		600	700	600	---
Unfavorable years		400	500	400	---

252--Bucan-Humdum-Rock outcrop assocation

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Bucan	Humdun	Rock outcrop	1	2
Thurber needlegrass	STTH2	20-50	20-50	---	20-50	15-25
Bluebunch wheatgrass	AGSP	5-10	5-10	---	5-10	20-30
Nevada bluegrass	PONE3	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	---	10-15
Balsamroot	BALSA	2-4	2-4	---	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	2-4	2-5
Arrowleaf balsamroot	BASA3	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	---	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	15-20	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	2-5	---
Spiny hopsage	GRSP	2-5	2-5	---	2-5	---
Big sagebrush	ARTR2	---	---	---	---	10-15
Other shrubs	SSSS	2-10	2-10		2-10	5-10
Range site number		O24XO05N	O24XO05N	None	O24XO05N	O25XO14N
Potential production (lb/acre):						
Favorable years		800	800	---	800	1,000
Normal years		600	600	---	600	800
Unfavorable years		400	400	---	400	600

262--Chen-Slaven-Chen, cobbly, association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Chen	Slaven	Chen, cobbly	1	2	3	4
Idaho fescue	FEID	25-50	---	25-50	---	---	---	5-15
Bluebunch wheatgrass	AGSP	15-30	20-30	15-30	---	---	---	5-10
Thurber needlegrass	STTH2	2-10	15-25	2-10	---	---	---	---
Spike fescue	HEKI	2-10	---	2-10	---	---	---	---
Nevada bluegrass	PONE3	---	2-10	---	5-15	---	5-10	2-5
Basin wildrye	ELCI2	---	---	---	50-60	---	---	---
Mat muhly	MURI	---	---	---	2-10	---	---	---
Sedge	CAREX	---	---	---	1-5	---	5-10	---
Tufted hairgrass	DECA5	---	---	---	---	---	30-60	---
Alpine timothy	PHAL2	---	---	---	---	---	5-10	---
Meadow barley	HOBR2	---	---	---	---	---	2-5	---
Mountain brome	BRMA4	---	---	---	---	---	---	10-15
Slender wheatgrass	AGTR	---	---	---	---	---	---	10-15
Bearded wheatgrass	AGSU	---	---	---	---	---	---	10-15
Bulbous oniongrass	MEBU	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	10-15	---	15-20	---	2-10	---
Balsamroot	BALSA	2-5	---	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-5	---	---	---	---	---
Arrowleaf balsamroot	BASA3	---	2-5	---	---	---	---	---
Sierra clover	TRWO	---	---	---	---	---	2-5	---
Cinquefoil	POTEN	---	---	---	---	---	2-5	---
Geranium	GERAN	---	---	---	---	---	---	2-5
Groundsel	SENEC	---	---	---	---	---	---	2-5
Lupine	LUPIN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	2-5	---	5-10	---	10-20	---
Low sagebrush	ARAR8	10-20	---	10-20	---	---	---	---
Douglas rabbitbrush	CHVI8	2-5	---	2-5	---	---	---	---
Big sagebrush	ARTR2	---	10-15	---	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---	---	---
Willow	SALIX	---	---	---	---	---	2-5	---
Serviceberry	AMELA	---	---	---	---	---	---	5-10
Mountain big sagebrush	ARTRV	---	---	---	---	---	---	5-10
Snowberry	SYMPH	---	---	---	---	---	---	2-10
Other shrubs	SSSS	---	5-10	---	2-5	---	2-5	---
Range site number		O24XO27N	O25XO14N	O24XO27N	O25XO03N	None	O25XO05N	O24XO32N
Potential production (lb/acre):								
Favorable years		1,200	1,000	1,200	2,500	---	2,000	2,200
Normal years		800	800	800	1,900	---	1,700	1,700
Unfavorable years		600	600	600	1,200	---	1,000	1,200

272--Cherry Spring-Enko association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Cherry Spring	Enko	1	2
Thurber needlegrass	STTH2	20-50	20-50	20-50	---
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	---
Basin wildrye	ELCI2	---	---	---	50-60
Western wheatgrass	AGSM	---	---	---	5-15
Balsamroot	BALSA	2-4	2-4	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	---
Other perennial forbs	PPFF	---	---	---	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	15-20
Black greasewood	SAVE4	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	2-5
Other shrubs	SSSS	2-10	2-10	2-10	---
Range site number		O24XO05N	O24XO05N	O24XO05N	O24XO06N
Potential production (lb/acre):					
Favorable years		800	800	800	1,500
Normal years		600	600	600	1,100
Unfavorable years		400	400	400	600

282--Chiara-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Chiara	Orovada	1	2
Thurber needlegrass	STTH2	20-50	20-50	20-50	---
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	---
Indian ricegrass	ORHY	---	---	---	20-40
Needleandthread	STCO4	---	---	---	5-15
Basin wildrye	ELCI2	---	---	---	2-10
Thickspike wheatgrass	AGDA	---	---	---	2-10
Balsamroot	BALSA	2-4	2-4	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	---
Lemon scurfpea	PSLA	---	---	---	2-5
Tufted eveningprimrose	OECA	---	---	---	2-4
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-10
Basin big sagebrush	ARTRT*	---	---	---	10-20
Fourwing saltbush	ATCA2	---	---	---	2-10
Hairy horsebrush	TECO2	---	---	---	5-8
Black greasewood	SAVE4	---	---	---	2-8
Rubber rabbitbrush	CHNA2	---	---	---	1-5
Other shrubs	SSSS	2-10	2-10	2-10	---
Range site number		024X005N	024X005N	024X005N	024X001N
Potential production (lb/acre):					
Favorable years		800	800	800	800
Normal years		600	600	600	500
Unfavorable years		400	400	400	300

283--Chiara-Tenabo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Chiara	Tenabo	1	2
Thurber needlegrass	STTH2	20-50	---	---	---
Bluebunch wheatgrass	AGSP	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	---	2-5
Indian ricegrass	ORHY	---	5-15	---	2-5
Sandberg bluegrass	POSE	---	2-5	---	---
Needleandthread	STCO4	---	1-3	---	2-5
Basin wildrye	ELCI2	---	---	30-50	10-20
Nevada bluegrass	PONE3	---	---	2-5	---
Western wheatgrass	AGSM	---	---	2-5	---
Other perennial grasses	PPGG	---	---	15-25	5-10
Balsamroot	BALSA	2-4	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	---
Other perennial forbs	PPFF	---	2-8	2-5	5-10
Wyoming big sagebrush	ARTRW*	15-20	---	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	---
Spiny hopsage	GRSP	2-5	2-5	---	---
Shadscale	ATCO	---	30-40	---	---
Bud sagebrush	ARSP5	---	20-30	---	---
Winterfat	EULA5	---	2-5	---	---
Basin big sagebrush	ARTRT*	---	---	5-10	10-15
Greene rabbitbrush	CHGR6	---	---	---	2-5
Nevada ephedra	EPNE	---	---	---	2-5
Fourwing saltbush	ATCA2	---	---	---	2-5
Other shrubs	SSSS	2-10	---	5-10	5-10
Range site number		024X005N	024X002N	028B003N	028B009N
Potential production (lb/acre):					
Favorable years		800	700	2,600	700
Normal years		600	450	1,250	400
Unfavorable years		400	300	800	300

284--Chiara-Dewar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Chiara	Dewar	1	2	3
Indian ricegrass	ORHY	20-30	20-30	20-30	20-30	5-15
Needleandthread	STCO4	10-20	10-20	10-20	10-20	5-10
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10	2-5
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	---
Other perennial grasses	PPGG	---	---	---	---	5-10
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	5-10
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	---
Shadscale	ATCO	---	---	---	---	30-40
Bud sagebrush	ARSP5	---	---	---	---	5-10
Winterfat	EULA5	---	---	---	---	2-5
Fourwing saltbush	ATCA2	---	---	---	---	2-5
Other shrubs	SSSS	5-15	5-15	5-15	5-15	5-15
Range site number		O28BO10N	O28BO10N	O28BO10N	O28BO10N	O28BO17N
Potential production (lb/acre):						
Favorable years		800	800	800	800	700
Normal years		600	600	600	600	500
Unfavorable years		400	400	400	400	250

285--Chiara-Trunk-Midraw association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Chiara	Trunk	Midraw	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	5-10	2-10	---	15-25
Bluebunch wheatgrass	AGSP	5-10	5-10	40-60	20-30	---	20-30
Bluegrass	POA++	---	---	2-10	---	---	---
Basin wildrye	ELCI2	---	---	2-5	2-15	50-60	---
Idaho fescue	FEID	---	---	---	20-40	---	---
Nevada bluegrass	PONE3	---	---	---	---	5-15	2-10
Mat muhly	MURI	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	1-5	---
Other perennial grasses	PPGG	---	---	---	---	15-20	10-15
Balsamroot	BALSA	2-4	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-5	1-5	---	2-5
Arrowleaf balsamroot	BASA3	---	---	2-5	1-5	---	2-5
Other perennial forbs	PPFF	---	---	---	---	5-10	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	5-10	---	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	T-5	5-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	10-15	---
Big sagebrush	ARTR2	---	---	---	---	---	10-15
Other shrubs	SSSS	2-10	2-10	---	---	2-5	5-10
Range site number		024X005N	024X005N	024X028N	024X021N	025X003N	025X014N
Potential production (lb/acre):							
Favorable years		800	800	1,000	1,400	2,500	1,000
Normal years		600	600	700	1,000	1,900	800
Unfavorable years		400	400	500	700	1,200	600

286--Chiara-Jenor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Chiara	Jenor	1	2
Thurber needlegrass	STTH2	20-50	---	10-20	---
Bluebunch wheatgrass	AGSP	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	2-10	2-5
Indian ricegrass	ORHY	---	5-15	5-15	2-5
Sandberg bluegrass	POSE	---	2-5	2-10	---
Needleandthread	STCO4	---	1-3	---	2-5
Basin wildrye	ELCI2	---	---	---	10-20
Other perennial grasses	PPGG	---	---	---	5-10
Balsamroot	BALSA	2-4	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	1-2	---
Globemallow	SPHAE	---	---	1-2	---
Phlox	PHLOX	---	---	1-2	---
Other perennial forbs	PPFF	---	2-8	---	5-10
Wyoming big sagebrush	ARTRW*	15-20	---	30-35	---
Downy rabbitbrush	CHVIP	2-5	---	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15	---
Shadscale	ATCO	---	30-40	---	---
Bud sagebrush	ARSP5	---	20-30	---	---
Winterfat	EULA5	---	2-5	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15
Greene rabbitbrush	CHGR6	---	---	---	2-5
Nevada ephedra	EPNE	---	---	---	2-5
Fourwing saltbush	ATCA2	---	---	---	2-5
Other shrubs	SSSS	2-10	---	---	5-10
Range site number		O24XO05N	O24XO02N	O24XO20N	O28BO09N
Potential production (lb/acre):					
Favorable years		800	700	700	700
Normal years		600	450	450	400
Unfavorable years		400	300	300	300

290--Creemon silt loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Creemon	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	10-20
Sandberg bluegrass	POSE	2-5	2-5	2-5	---
Needleandthread	STCO4	1-3	1-3	1-3	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5	---
Winterfat	EULA5	2-5	2-5	2-5	60-70
Range site number		024X002N	024X002N	024X002N	024X004N
Potential production (lb/acre):					
Favorable years		700	700	700	500
Normal years		450	450	450	350
Unfavorable years		300	300	300	200

291--Creemon silt loam, 2 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Creemon	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	10-20
Sandberg bluegrass	POSE	2-5	2-5	2-5	---
Needleandthread	STCO4	1-3	1-3	1-3	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5	---
Winterfat	EULA5	2-5	2-5	2-5	60-70
Range site number		024X002N	024X002N	024X002N	024X004N
Potential production (lb/acre):					
Favorable years		700	700	700	500
Normal years		450	450	450	350
Unfavorable years		300	300	300	200

292--Creemon silt loam, 0 to 2 percent slopes, occasionally flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Creemon	1	2	3
Indian ricegrass	ORHY	5-15	5-15	5-15	10-20
Bottlebrush squirreltail	SIHY	2-10	5-15	5-15	2-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	---
Needleandthread	STCO4	---	1-3	1-3	---
Globemallow	SPHAE	1-4	---	---	---
Phlox	PHLOX	1-4	---	---	---
Other perennial forbs	PPFF	---	2-8	2-8	2-8
Winterfat	EULA5	20-40	2-5	2-5	60-70
Bud sagebrush	ARSP5	20-30	20-30	20-30	2-5
Shadscale	ATCO	2-5	30-40	30-40	---
Spiny hopsage	GRSP	---	2-5	2-5	---
Range site number		024X014N	024X002N	024X002N	024X004N
Potential production (lb/acre):					
Favorable years		400	700	700	500
Normal years		300	450	450	350
Unfavorable years		200	300	300	200

293--Creemon silt loam, strongly saline, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Creemon	1	2
Bottlebrush squirreltail	SIHY	5-10	5-15	5-10
Indian ricegrass	ORHY	---	5-15	---
Sandberg bluegrass	POSE	---	2-5	---
Needleandthread	STCO4	---	1-3	---
Other perennial grasses	PPGG	T-10	---	T-10
Perennial forbs	PPFF	2-8	2-8	2-8
Shadscale	ATCO	30-50	30-40	30-50
Black greasewood	SAVE4	15-30	---	15-30
Bud sagebrush	ARSP5	5-15	20-30	5-15
Seepweed	SUAED	2-15	---	2-15
Spiny hopsage	GRSP	---	2-5	---
Winterfat	EULA5	---	2-5	---
Range site number		024X003N	024X002N	024X003N
Potential production (lb/acre):				
Favorable years		600	700	600
Normal years		450	450	450
Unfavorable years		300	300	300

294--Creemon-Orovada-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Creemon	Orovada	Broyles	1	2
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	2-10	2-10	2-10	2-10
Sandberg bluegrass	POSE	2-5	2-10	2-5	2-10	2-10
Thurber needlegrass	STTH2	---	10-20	---	10-20	10-20
Globemallow	SPHAE	1-4	1-2	1-4	1-2	1-2
Phlox	PHLOX	1-4	1-2	1-4	1-2	1-2
Tapertip hawksbeard	CRAC2	---	1-2	---	1-2	1-2
Winterfat	EULA5	20-40	---	20-40	---	---
Bud sagebrush	ARSP5	20-30	---	20-30	---	---
Shadscale	ATCO	2-5	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	30-35	---	30-35	30-35
Spiny hopsage	GRSP	---	5-15	---	5-15	5-15
Range site number		O24XO14N	O24XO2ON	O24XO14N	O24XO2ON	O24XO2ON
Potential production (lb/acre):						
Favorable years		400	700	400	700	700
Normal years		300	450	300	450	450
Unfavorable years		200	300	200	300	300

295--Creemon-Cren association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Creemon	Cren	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	---	5-10	2-5
Indian ricegrass	ORHY	5-15	5-15	---	---	2-10
Sandberg bluegrass	POSE	2-5	2-5	---	---	2-5
Needleandthread	STCO4	1-3	1-3	---	---	---
Basin wildrye	ELCI2	---	---	50-60	---	10-20
Western wheatgrass	AGSM	---	---	5-15	---	---
Other perennial grasses	PPGG	---	---	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	---	30-50	---
Bud sagebrush	ARSP5	20-30	20-30	---	5-15	---
Spiny hopsage	GRSP	2-5	2-5	---	---	15-30
Winterfat	EULA5	2-5	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	15-20	---	15-25
Black greasewood	SAVE4	---	---	2-10	15-30	2-10
Rubber rabbitbrush	CHNA2	---	---	2-5	---	2-5
Seepweed	SUAED	---	---	---	2-15	---
Anderson peachbrush	PRAN2	---	---	---	---	2-10
Range site number		O24XOO2N	O24XOO2N	O24XOO6N	O24XOO3N	O24XO41
Potential production (lb/acre):						
Favorable years		700	700	1,500	600	1,000
Normal years		450	450	1,100	450	800
Unfavorable years		300	300	600	300	600

296--Creemon-Hessing association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Creemon	Hessing	1	2	3
ottlebrush squirreltail	SIHY	5-15	5-15	2-10	2-10	5-15
ndian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
andberg bluegrass	POSE	2-5	2-5	2-10	2-5	2-5
eedleandthread	STCO4	1-3	1-3	---	---	1-3
hurber needlegrass	STTH2	---	---	10-20	---	---
apertip hawksbeard	CRAC2	---	---	1-2	---	---
lobemallow	SPHAE	---	---	1-2	1-4	---
hlox	PHLOX	---	---	1-2	1-4	---
ther perennial forbs	PPFF	2-8	2-8	---	---	2-8
hadscale	ATCO	30-40	30-40	---	2-5	30-40
ud sagebrush	ARSP5	20-30	20-30	---	20-30	20-30
piny hopsage	GRSP	2-5	2-5	5-15	---	2-5
interfat	EULA5	2-5	2-5	---	20-40	2-5
yoming big sagebrush	ARTRW*	---	---	30-35	---	---
ange site number		024X002N	024X002N	024X020N	024X014N	024X002N
otential production (lb/acre):						
Favorable years		700	700	700	400	700
Normal years		450	450	450	300	450
Unfavorable years		300	300	300	200	300

297--Creemon-Orovada-Tulase association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Creemon	Orovada	Tulase	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	---	5-10	2-5	2-10
Indian ricegrass	ORHY	5-15	---	---	---	2-10	5-15
Sandberg bluegrass	POSE	2-5	---	---	---	2-5	2-10
Needleandthread	STCO4	1-3	---	---	---	---	---
Thurber needlegrass	STTH2	---	20-50	20-50	---	---	10-20
Bluebunch wheatgrass	AGSP	---	5-10	5-10	---	---	---
Basin wildrye	ELCI2	---	---	---	---	10-20	---
Other perennial grasses	PPGG	---	---	---	T-10	---	---
Balsamroot	BALSA	---	2-4	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	2-4	---	---	1-2
Globemallow	SPHAE	---	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	---	---	2-8	---	---
Shadscale	ATCO	30-40	---	---	30-50	---	---
Bud sagebrush	ARSP5	20-30	---	---	5-15	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---	15-30	5-15
Winterfat	EULA5	2-5	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	---	---	30-35
Downy rabbitbrush	CHVIP	---	2-5	2-5	---	---	---
Black greasewood	SAVE4	---	---	---	15-30	2-10	---
Seepweed	SUAED	---	---	---	2-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-25	---
Anderson peachbrush	PRAN2	---	---	---	---	2-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---
Other shrubs	SSSS	---	2-10	2-10	---	---	---
Range site number		O24XOO2N	O24XOO5N	O24XOO5N	O24XOO3N	O24XO41N	O24XO20N
Potential production (lb/acre):							
Favorable years		700	800	800	600	1,000	700
Normal years		450	600	600	450	800	450
Unfavorable years		300	400	400	300	600	300

298--Creemon-Misad association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Creemon	Misad	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-10	2-10	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-10	2-10
Needleandthread	STCO4	1-3	1-3	1-3	---	---	---
Thurber needlegrass	STTH2	---	---	---	---	10-20	10-20
Other perennial grasses	PPGG	---	---	---	T-10	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2	1-2
Globemallow	SPHAE	---	---	---	---	1-2	1-2
Phlox	PHLOX	---	---	---	---	1-2	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	---	---
Shadscale	ATCO	30-40	30-40	30-40	30-50	---	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	5-15	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---	5-15	5-15
Winterfat	EULA5	2-5	2-5	2-5	---	---	---
Black greasewood	SAVE4	---	---	---	15-30	---	---
Seepweed	SUAED	---	---	---	2-15	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35	30-35
Range site number		O24XO02N	O24XO02N	O24XO02N	O24XO03N	O24XO20N	O24XO20N
Potential production (lb/acre):							
Favorable years		700	700	700	600	700	700
Normal years		450	450	450	450	450	450
Unfavorable years		300	300	300	300	300	300

300--Cren silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Cren	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5	2-5
Range site number		024X002N	024X002N	024X002N	024X002N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

303--Cren-Doowak-Relley association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Cren	Doowak	Relley	1	2	3
Bottlebrush squirreltail	SIHY	5-15	2-10	5-15	5-15	---	---
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	---	---
Sandberg bluegrass	POSE	2-5	2-10	2-5	2-5	---	---
Needleandthread	STCO4	1-3	---	1-3	1-3	---	---
Thurber needlegrass	STTH2	---	10-20	---	---	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60	50-60
Western wheatgrass	AGSM	---	---	---	---	5-15	5-15
Tapertip hawksbeard	CRAC2	---	1-2	---	---	---	---
Globemallow	SPHAE	---	1-2	---	---	---	---
Phlox	PHLOX	---	1-2	---	---	---	---
Other perennial forbs	PPFF	2-8	---	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	---	30-40	30-40	---	---
Bud sagebrush	ARSP5	20-30	---	20-30	20-30	---	---
Spiny hopsage	GRSP	2-5	5-15	2-5	2-5	---	---
Winterfat	EULA5	2-5	---	2-5	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	30-35	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-20	15-20
Black greasewood	SAVE4	---	---	---	---	2-10	2-10
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	2-5
Range site number		O24XOO2N	O24XO2ON	O24XOO2N	O24XOO2N	O24XOO6N	O24XOO6N
Potential production (lb/acre):							
Favorable years		700	700	700	700	1,500	1,500
Normal years		450	450	450	450	1,100	1,100
Unfavorable years		300	300	300	300	600	600

304--Cren-Raglan-Batan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name			Inclusion number--
		Cren	Raglan	Batan	1
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	5-15
Indian ricegrass	ORHY	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	2-5
Needleandthread	STCO4	1-3	1-3	---	1-3
Other perennial grasses	PPGG	---	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-50	30-40
Bud sagebrush	ARSP5	20-30	20-30	5-15	20-30
Spiny hopsage	GRSP	2-5	2-5	---	2-5
Winterfat	EULA5	2-5	2-5	---	2-5
Black greasewood	SAVE4	---	---	15-30	---
Seepweed	SUAED	---	---	2-15	---
Range site number		024X002N	024X002N	024X003N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	600	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

310--Davey fine sandy loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Davey	1	2
Needleandthread	STCO4	20-30	5-15	---
Indian ricegrass	ORHY	10-20	20-40	5-15
Thickspike wheatgrass	AGDA	2-10	2-10	---
Bottlebrush squirreltail	SIHY	2-5	---	2-10
Basin wildrye	ELCI2	---	2-10	---
Thurber needlegrass	STTH2	---	---	10-20
Sandberg bluegrass	POSE	---	---	2-10
Lemon scurfpea	PSLA	---	2-5	---
Tufted eveningprimrose	OECA	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	1-2
Globemallow	SPHAE	---	---	1-2
Phlox	PHLOX	---	---	1-2
Other perennial forbs	PPFF	10-20	---	---
Basin big sagebrush	ARTRT*	5-15	10-20	---
Wyoming big sagebrush	ARTRW*	T-5	---	30-35
Spiny hopsage	GRSP	T-5	5-10	5-15
Fourwing saltbush	ATCA2	---	2-10	---
Hairy horsebrush	TECO2	---	5-8	---
Black greasewood	SAVE4	---	2-8	---
Rubber rabbitbrush	CHNA2	---	1-5	---
Range site number		O24XO17N	O24XOO1N	O24XO2ON
Potential production (lb/acre):				
Favorable years		900	800	700
Normal years		700	500	450
Unfavorable years		500	300	300

312--Davey fine sandy loam, cemented substratum

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Davey	1	2	3
Needleandthread	STCO4	20-30	1-3	5-15	---
Indian ricegrass	ORHY	10-20	5-15	20-40	5-15
Thickspike wheatgrass	AGDA	2-10	---	2-10	---
Bottlebrush squirreltail	SIHY	2-5	5-15	---	2-10
Sandberg bluegrass	POSE	---	2-5	---	2-10
Basin wildrye	ELCI2	---	---	2-10	---
Thurber needlegrass	STTH2	---	---	---	10-20
Lemon scurfpea	PSLA	---	---	2-5	---
Tufted eveningprimrose	OECA	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2
Globemallow	SPHAE	---	---	---	1-2
Phlox	PHLOX	---	---	---	1-2
Other perennial forbs	PPFF	10-20	2-8	---	---
Basin big sagebrush	ARTRT*	5-15	---	10-20	---
Wyoming big sagebrush	ARTRW*	T-5	---	---	30-35
Spiny hopsage	GRSP	T-5	2-5	5-10	5-15
Shadscale	ATCO	---	30-40	---	---
Bud sagebrush	ARSP5	---	20-30	---	---
Winterfat	EULA5	---	2-5	---	---
Fourwing saltbush	ATCA2	---	---	2-10	---
Hairy horsebrush	TECO2	---	---	5-8	---
Black greasewood	SAVE4	---	---	2-8	---
Rubber rabbitbrush	CHNA2	---	---	1-5	---
Range site number		C24X017N	O24X002N	O24X001N	O24X020N
Potential production (lb/acre):					
Favorable years		900	700	800	700
Normal years		700	450	500	450
Unfavorable years		500	300	300	300

313--Davey-Goldrun complex

[Absence of an entry indicates that the named plant is not key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name		Inclusion number--
		Davey	Goldrun	1
Needleandthread	STCO4	20-30	5-15	---
Indian ricegrass	ORHY	10-20	20-40	5-15
Thickspike wheatgrass	AGDA	2-10	2-10	---
Bottlebrush squirreltail	SIHY	2-5	---	2-10
Basin wildrye	ELCI2	---	2-10	---
Thurber needlegrass	STTH2	---	---	10-20
Sandberg bluegrass	POSE	---	---	2-10
Lemon scurfpea	PSLA	---	2-5	---
Tufted eveningprimrose	OECA	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	1-2
Globemallow	SPHAE	---	---	1-2
Phlox	PHLOX	---	---	1-2
Other perennial forbs	PPFF	10-20	---	---
Basin big sagebrush	ARTRT*	5-15	10-20	---
Wyoming big sagebrush	ARTRW*	T-5	---	30-35
Spiny hopsage	GRSP	T-5	5-10	5-15
Fourwing saltbush	ATCA2	---	2-10	---
Hairy horsebrush	TECO2	---	5-8	---
Black greasewood	SAVE4	---	2-8	---
Rubber rabbitbrush	CHNA2	---	1-5	---
Range site number		O24XO17N	O24XOO1N	O24XO2ON
Potential production (lb/acre):				
Favorable years		900	800	700
Normal years		700	500	450
Unfavorable years		500	300	300

340--Duffer very fine sandy loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Duffer	1	2	3	4
Alkali sacaton	SPAI	40-70	15-30	---	---	---
Inland saltgrass	DIST	T-15	5-10	5-10	---	5-10
Basin wildrye	ELCI2	T-5	40-60	5-15	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---
Wildrye	ELMYU	---	---	---	---	30-60
Nevada bluegrass	PONE3	---	---	---	---	5-10
Mat muhly	MURI	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	T-10	5-15
Sierra clover	TRWO	---	---	---	---	2-5
Other perennial forbs	PPFF	2-8	---	T-5	2-8	5-10
Iodinebush	ALOC2	10-20	---	---	---	---
Saltbush	ATRIP	5-10	---	---	---	---
Black greasewood	SAVE4	2-5	5-15	60-75	15-30	---
Shadscale	ATCO	---	---	---	30-50	---
Bud sagebrush	ARSP5	---	---	---	5-15	---
Seepweed	SUAED	---	---	---	2-15	---
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---
Rubber rabbitbrush	CHNA2	---	1-2	---	---	---
Willow	SALIX	---	---	---	---	5-10
Basin big sagebrush	ARTRT*	---	---	---	---	2-5
Silver sagebrush	ARCA13	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	2-8
Range site number		024X010N	024X007N	024X011N	024X003N	025X001N
Potential production (lb/acre):						
Favorable years		450	1,900	500	600	3,000
Normal years		300	1,400	350	450	2,500
Unfavorable years		150	800	200	300	1,800

370--Enko fine sandy loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions	
		Soil name	Inclusion number--
		Enko	1
Thurber needlegrass	STTH2	20-50	---
Bluebunch wheatgrass	AGSP	5-10	---
Indian ricegrass	ORHY	---	20-40
Needleandthread	STCO4	---	5-15
Basin wildrye	ELCI2	---	2-10
Thickspike wheatgrass	AGDA	---	2-10
Balsamroot	BALSA	2-4	---
Tapertip hawksbeard	CRAC2	2-4	---
Lemon scurfpea	PSLA	---	2-5
Tufted eveningprimrose	OECA	---	2-4
Wyoming big sagebrush	ARTRW*	15-20	---
Downy rabbitbrush	CHVIP	2-5	---
Spiny hopsage	GRSP	2-5	5-10
Basin big sagebrush	ARTRT*	---	10-20
Fourwing saltbush	ATCA2	---	2-10
Hairy horsebrush	TECO2	---	5-8
Black greasewood	SAVE4	---	2-8
Rubber rabbitbrush	CHNA2	---	1-5
Other shrubs	SSSS	2-10	---
Range site number		O24XOO5N	O24XOO1N
Potential production (lb/acre):			
Favorable years		800	800
Normal years		600	500
Unfavorable years		400	300

371--Enko-Shabliss-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name			Inclusion number--
		Enko	Shabliss	Orovada	1
Thurber needlegrass	STTH2	20-50	20-50	10-20	---
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---
Indian ricegrass	ORHY	---	---	5-15	20-40
Bottlebrush squirreltail	SIHY	---	---	2-10	---
Sandberg bluegrass	POSE	---	---	2-10	---
Needleandthread	STCO4	---	---	---	5-15
Basin wildrye	ELCI2	---	---	---	2-10
Thickspike wheatgrass	AGDA	---	---	---	2-10
Balsamroot	BALSA	2-4	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	1-2	---
Globemallow	SPHAE	---	---	1-2	---
Phlox	PHLOX	---	---	1-2	---
Lemon scurfpea	PSLA	---	---	---	2-5
Tufted eveningprimrose	OECA	---	---	---	2-4
Wyoming big sagebrush	ARTRW*	15-20	15-20	30-35	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15	5-10
Basin big sagebrush	ARTRT*	---	---	---	10-20
Fourwing saltbush	ATCA2	---	---	---	2-10
Hairy horsebrush	TECO2	---	---	---	5-8
Black greasewood	SAVE4	---	---	---	2-8
Rubber rabbitbrush	CHNA2	---	---	---	1-5
Other shrubs	SSSS	2-10	2-10	---	---
Range site number		O24XO05N	O24XO05N	O24XO20N	O24XO01N
Potential production (lb/acre):					
Favorable years		800	800	700	800
Normal years		600	600	450	500
Unfavorable years		400	400	300	300

400--Glean-Walti-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Glean	Walti	Cleavage	1	2	3	4
Idaho fescue	FEID	30-60	25-50	10-20	1-10	---	5-15	---
Bluebunch wheatgrass	AGSP	5-10	15-30	---	20-50	---	5-15	---
Cusick bluegrass	POCU3	5-10	---	2-5	---	---	2-5	---
Mountain brome	BRMA4	2-5	---	---	2-15	---	5-10	---
Sedge	CAREX	2-5	---	---	---	---	---	---
Thurber needlegrass	STTH2	---	2-10	---	2-5	---	---	---
Spike fescue	HEKI	---	2-10	---	---	---	---	---
Webber ricegrass	ORWE	---	---	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	2-5	---	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---	---
Basin wildrye	ELCI2	---	---	---	5-10	---	2-5	---
Slender wheatgrass	AGTR	---	---	---	---	---	2-5	---
Bearded wheatgrass	AGSU	---	---	---	---	---	2-5	---
Letterman needlegrass	STLE4	---	---	---	---	---	2-5	---
Nevada bluegrass	PONE3	---	---	---	---	---	2-5	---
Tapertip hawksbeard	CRAC2	1-3	---	---	2-5	---	---	---
Lupine	LUPIN	1-2	---	---	---	---	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---	---
Arrowleaf balsamroot	BASA3	---	---	---	2-5	---	---	---
Other perennial forbs	PPFF	---	---	---	---	---	5-15	---
Mountain big sagebrush	ARTRV	5-15	---	---	5-15	---	5-10	---
Snowberry	SYMPH	2-5	---	---	---	---	2-10	---
Low sagebrush	ARAR8	---	10-20	5-15	---	---	---	---
Douglas rabbitbrush	CHVI8	---	2-5	---	---	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	---	---
Serviceberry	AMELA	---	---	---	---	---	5-10	---
Oceanspray	HOLOD	---	---	---	---	---	5-10	---
Threetip sagebrush	ARTR4	---	---	---	---	---	2-10	---
Currant	RIBES	---	---	---	---	---	2-5	---
Range site number		O24XO23N	O24XO27N	O24XO16N	O24XO29N	None	O24XO34N	None
Potential production (lb/acre):								
Favorable years		1,500	1,200	350	1,500	---	1,600	---
Normal years		1,200	800	250	1,100	---	1,300	---
Unfavorable years		900	600	150	800	---	800	---

411--Golconda-Blackhawk association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Golconda	Blackhawk	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10
Needleandthread	STCO4	1-3	1-3	1-3	---
Thurber needlegrass	STTH2	---	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	---	1-2
Globemallow	SPHAE	---	---	---	1-2
Phlox	PHLOX	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	30-35
Range site number		024X002N	024X002N	024X002N	024X020N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

412--Golconda-Dun Glen association

bsence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Golconda	Dun Glen	1	2	3
ottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15	2-10
ndian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
andberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-10
eedleandthread	STCO4	1-3	1-3	1-3	1-3	---
nurber needlegrass	STTH2	---	---	---	---	10-20
apertip hawksbeard	CRAC2	---	---	---	---	1-2
lobemallow	SPHAE	---	---	---	---	1-2
hlox	PHLOX	---	---	---	---	1-2
ther perennial forbs	PPFF	2-8	2-8	2-8	2-8	---
hadscale	ATCO	30-40	30-40	30-40	30-40	---
ud sagebrush	ARSP5	20-30	20-30	20-30	20-30	---
piny hopsage	GRSP	2-5	2-5	2-5	2-5	5-15
interfat	EULA5	2-5	2-5	2-5	2-5	---
yoming big sagebrush	ARTRW*	---	---	---	---	30-35
ange site number		024X002N	024X002N	024X002N	024X002N	024X020N
otential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

413--Golconda-Blownout land complex

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Golconda	Blownout land	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	2-10	5-15	---
Indian ricegrass	ORHY	5-15	---	5-15	5-15	---
Sandberg bluegrass	POSE	2-5	---	2-10	2-5	---
Needleandthread	STCO4	1-3	---	---	1-3	---
Thurber needlegrass	STTH2	---	---	10-20	---	20-50
Bluebunch wheatgrass	AGSP	---	---	---	---	5-10
Tapertip hawksbeard	CRAC2	---	---	1-2	---	2-4
Globemallow	SPHAE	---	---	1-2	---	---
Phlox	PHLOX	---	---	1-2	---	---
balsamroot	BALSA	---	---	---	---	2-4
Other perennial forbs	PPFF	2-8	---	---	2-8	---
Shadscale	ATCO	30-40	---	---	30-40	---
Bud sagebrush	ARSP5	20-30	---	---	20-30	---
Spiny hopsage	GRSP	2-5	---	5-15	2-5	2-5
Winterfat	EULA5	2-5	---	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	30-35	---	15-20
Downy rabbitbrush	CHVIP	---	---	---	---	2-5
Range site number		O24XOO2N	None	O24XO20N	O24XOO2N	O24XOO5N
Potential production (lb/acre):						
Favorable years		700	---	700	700	800
Normal years		450	---	450	450	600
Unfavorable years		300	---	300	300	400

420--Goldrun fine sand, 0 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Goldrun	1	2	3
Indian ricegrass	ORHY	20-40	10-20	5-15	5-15
Needleandthread	STCO4	5-15	20-30	1-3	---
Basin wildrye	ELCI2	2-10	---	---	---
Thickspike wheatgrass	AGDA	2-10	2-10	---	---
Bottlebrush squirreltail	SIHY	---	2-5	5-15	2-10
Sandberg bluegrass	POSE	---	---	2-5	2-10
Thurber needlegrass	STTH2	---	---	---	10-20
Lemon scurfpea	PSLA	2-5	---	---	---
Tufted eveningprimrose	OECA	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2
Globemallow	SPHAE	---	---	---	1-2
Phlox	PHLOX	---	---	---	1-2
Other perennial forbs	PPFF	---	10-20	2-8	---
Basin big sagebrush	ARTRT*	10-20	5-15	---	---
Spiny hopsage	GRSP	5-10	T-5	2-5	5-15
Fourwing saltbush	ATCA2	2-10	---	---	---
Hairy horsebrush	TECO2	5-8	---	---	---
Black greasewood	SAVE4	2-8	---	---	---
Rubber rabbitbrush	CHNA2	1-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	T-5	---	30-35
Shadscale	ATCO	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	20-30	---
Winterfat	EULA5	---	---	2-5	---
Range site number		O24X001N	O24X017N	O24X002N	O24X020N
Potential production (lb/acre):					
Favorable years		800	900	700	700
Normal years		500	700	450	450
Unfavorable years		300	500	300	300

422--Goldrun-Old Camp association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Goldrun	Old Camp	1	2
Indian ricegrass	ORHY	20-40	---	---	5-15
Needleandthread	STCO4	5-15	---	---	---
Basin wildrye	ELCI2	2-10	---	---	---
Thickspike wheatgrass	AGDA	2-10	---	---	---
Thurber needlegrass	STTH2	---	20-50	---	10-20
Bluebunch wheatgrass	AGSP	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	---	2-10
Sandberg bluegrass	POSE	---	---	---	2-10
Lemon scurfpea	PSLA	2-5	---	---	---
Tufted eveningprimrose	OECA	2-4	---	---	---
balsamroot	BALSA	---	2-4	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	1-2
Globemallow	SPHAE	---	---	---	1-2
Phlox	PHLOX	---	---	---	1-2
Basin big sagebrush	ARTRT*	10-20	---	---	---
Spiny hopsage	GRSP	5-10	2-5	---	5-15
Fourwing saltbush	ATCA2	2-10	---	---	---
Hairy horsebrush	TECO2	5-8	---	---	---
Black greasewood	SAVE4	2-8	---	---	---
Rubber rabbitbrush	CHNA2	1-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	30-35
Downy rabbitbrush	CHVIP	---	2-5	---	---
Other shrubs	SSSS	---	2-10	---	---
Range site number		O24XOO1N	O24XOO5N	None	O24XO20N
Potential production (lb/acre):					
Favorable years		800	800	---	700
Normal years		500	600	---	450
Unfavorable years		300	400	---	300

441--Gund-Umberland association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Gund	Umberland	1	2	3
Basin wildrye	ELCI2	50-60	---	15-20	40-60	---
Western wheatgrass	AGSM	5-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	2-10	---	---
Inland saltgrass	DIST	---	---	2-10	5-10	---
Alkali sacaton	SPAI	---	---	---	15-30	---
Other perennial grasses	PPGG	---	T-10	---	---	---
Perennial forbs	PPFF	2-8	2-8	2-8	---	---
Basin big sagebrush	ARTRT*	15-20	---	---	---	---
Black greasewood	SAVE4	2-10	15-30	40-60	5-15	---
Rubber rabbitbrush	CHNA2	2-5	---	---	1-2	---
Shadscale	ATCO	---	30-50	---	---	---
Bud sagebrush	ARSP5	---	5-15	---	---	---
Seepweed	SUAED	---	2-15	---	---	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2	---
Range site number		O24XO06N	O24XO03N	O24XO08N	O24XO07N	None
Potential production (lb/acre):						
Favorable years		1,500	600	800	1,900	---
Normal years		1,100	450	600	1,400	---
Unfavorable years		600	300	400	800	---

442--Gund-Bubus-Wendane association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Gund	Bubus	Wendane	1	2	3
Basin wildrye	ELCI2	15-20	---	40-60	50-60	15-20	5-15
Bottlebrush squirreltail	SIHY	2-10	5-10	---	---	2-10	---
Inland saltgrass	DIST	2-10	---	5-10	---	2-10	5-10
Alkali sacaton	SPAI	---	---	15-30	---	---	---
Western wheatgrass	AGSM	---	---	---	5-15	---	---
Other perennial grasses	PPGG	---	T-10	---	---	---	---
Perennial forbs	PPFF	2-8	2-8	---	2-8	2-8	T-5
Black greasewood	SAVE4	40-60	15-30	5-15	2-10	40-60	60-75
Shadscale	ATCO	---	30-50	---	---	---	---
Bud sagebrush	ARSP5	---	5-15	---	---	---	---
Seepweed	SUAED	---	2-15	---	---	---	---
Alkali rabbitbrush	CHAL9	---	---	1-2	---	---	---
Rubber rabbitbrush	CHNA2	---	---	1-2	2-5	---	---
Basin big sagebrush	ARTRT*	---	---	---	15-20	---	---
Range site number		024X008N	024X003N	024X007N	024X006N	024X008N	024X011N
Potential production (lb/acre):							
Favorable years		800	600	1,900	1,500	800	500
Normal years		600	450	1,400	1,100	600	350
Unfavorable years		400	300	800	600	400	200

443--Gund-Batan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Gund	Batan	1	2	3
Basin wildrye	ELCI2	5-20	---	5-15	40-60	---
Bottlebrush squirreltail	SIHY	2-10	5-10	---	---	---
Inland saltgrass	DIST	2-10	---	5-10	5-10	10-25
Alkali sacaton	SPAI	---	---	---	15-30	---
Nuttall alkaligrass	PUAI	---	---	---	---	5-10
Baltic rush	JUBA	---	---	---	---	5-10
Other perennial grasses	PPGG	---	T-10	---	---	---
Cinquefoil	POTEN	---	---	---	---	5-10
Eriogonum	ERIOG	---	---	---	---	2-5
Other perennial forbs	PPFF	2-8	2-8	T-5	---	---
Black greasewood	SAVE4	40-60	15-30	60-75	5-15	T-5
Shadscale	ATCO	---	30-50	---	---	---
Bud sagebrush	ARSP5	---	5-15	---	---	---
Seepweed	SUAED	---	2-15	---	---	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2	20-35
Rubber rabbitbrush	CHNA2	---	---	---	1-2	T-5
Range site number		024X008N	024X003N	024X011N	024X007N	024X044N
Potential production (lb/acre):						
Favorable years		800	600	500	1,900	350
Normal years		600	450	350	1,400	225
Unfavorable years		400	300	200	800	150

461--Hapgood-Packer-Layview association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Hapgood	Packer	Layview	1	2	3	4
Mountain brome	BRMA4	10-15	---	---	---	---	---	X
Slender wheatgrass	AGTR	10-15	---	---	2-5	---	---	X
Bearded wheatgrass	AGSU	10-15	---	---	---	---	---	---
Idaho fescue	FEID	5-15	10-20	10-20	---	---	25-50	X
Bluebunch wheatgrass	AGSP	5-10	---	---	---	---	15-30	---
Spike fescue	HEKI	2-15	---	---	---	---	2-10	---
Bulbous oniongrass	MEBU	2-5	---	---	---	---	---	X
Nevada bluegrass	PONE3	2-5	---	---	---	---	---	---
Webber ricegrass	ORWE	---	5-10	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	5-10	---	---	---	---
Cusick bluegrass	POCU3	---	2-5	2-5	---	---	---	---
Sandberg bluegrass	POSE	---	2-5	2-5	---	---	---	---
Pine bluegrass	POSC	---	2-5	2-5	---	---	---	---
Letterman needlegrass	STLE4	---	---	---	60-70	---	---	---
Columbia needlegrass	STCO3	---	---	---	2-5	---	---	---
Thurber needlegrass	STTH2	---	---	---	---	---	2-10	---
Other perennial grasses	PPGG	---	---	---	2-5	---	---	X
Geranium	GERAN	2-5	---	---	---	---	---	X
Groundsel	SENEC	2-5	---	---	---	---	---	---
Lupine	LUPIN	2-5	---	---	---	---	---	X
Goldenweed	HAPLO2	---	2-5	2-5	---	---	---	---
Phlox	PHLOX	---	2-5	2-5	---	---	---	---
Tailcup lupine	LUCA	---	---	---	20-40	---	---	---
balsamroot	BALSA	---	---	---	---	---	2-5	---
Horsemint	AGUR	---	---	---	---	---	---	X
Columbine	AQUIL	---	---	---	---	---	---	X
Meadowrue	THALI2	---	---	---	---	---	---	X
Sweet cicely	OSMOR	---	---	---	---	---	---	X
Other perennial forbs	PPFF	---	---	---	---	---	---	X
Serviceberry	AMELA	5-10	---	---	---	---	---	---
Mountain big sagebrush	ARTRV	5-10	---	---	---	---	---	---
Snowberry	SYMPH	2-10	---	---	---	---	---	X
Low sagebrush	ARAR8	---	5-15	5-15	---	---	10-20	---
Black sagebrush	ARARN	---	5-15	5-15	---	---	---	---
Douglas rabbitbrush	CHVI8	---	---	---	---	---	2-5	---
Big sagebrush	ARTR2	---	---	---	---	---	---	X
Currant	RIBES	---	---	---	---	---	---	X
Quaking aspen	POTR5	---	---	---	---	---	---	X
Range site number		024X032N	024X016N	024X016N	025X028N	None	024X027N	025X065N
Potential production (lb/acre):								
Favorable years		2,200	350	350	1,000	---	1,200	800
Normal years		1,700	250	250	800	---	800	600
Unfavorable years		1,200	150	150	500	---	600	400

466--Hapgood-Tusel-Winada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Hapgood	Tusel	Winada	1	2	3
Mountain brome	BRMA4	10-15	2-5	---	---	---	10-15
Slender wheatgrass	AGTR	10-15	---	---	---	---	10-15
Bearded wheatgrass	AGSU	10-15	---	---	---	---	10-15
Idaho fescue	FEID	5-15	30-60	25-50	---	10-20	5-15
Bluebunch wheatgrass	AGSP	5-10	5-10	15-30	---	---	5-10
Spike fescue	HEKI	2-15	---	2-10	---	---	2-15
Bulbous oniongrass	MEBU	2-5	---	---	---	---	2-5
Nevada bluegrass	PONE3	2-5	---	---	---	---	2-5
Cusick bluegrass	POCU3	---	5-10	---	---	2-5	---
Sedge	CAREX	---	2-5	---	---	---	---
Thurber needlegrass	STTH2	---	---	2-10	---	---	---
Webber ricegrass	ORWE	---	---	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10	---
Sandberg bluegrass	POSE	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	2-5	---
Geranium	GERAN	2-5	---	---	---	---	2-5
Groundsel	SENEC	2-5	---	---	---	---	2-5
Lupine	LUPIN	2-5	1-2	---	---	---	2-5
Tapertip hawksbeard	CRAC2	---	1-3	---	---	---	---
balsamroot	BALSA	---	---	2-5	---	---	---
Goldenweed	HAPLO2	---	---	---	---	2-5	---
Phlox	PHLOX	---	---	---	---	2-5	---
Serviceberry	AMELA	5-10	---	---	---	---	5-10
Mountain big sagebrush	ARTRV	5-10	5-15	---	---	---	5-10
Snowberry	SYMPH	2-10	2-5	---	---	---	2-10
Low sagebrush	ARAR8	---	---	10-20	---	5-15	---
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---	---
Black sagebrush	ARARN	---	---	---	---	5-15	---
Range site number		O24XO32N	O24XO23N	O24XO27N	None	O24XO16N	O24XO32N
Potential production (lb/acre):							
Favorable years		2,200	1,500	1,200	---	350	1,200
Normal years		1,700	1,200	800	---	250	1,700
Unfavorable years		1,200	900	600	---	150	1,200

467--Hapgood-Sumine-Cleavage association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Hapgood	Sumine	Cleavage	1	2	3
Mountain brome	BRMA4	10-15	2-15	---	---	---	X
Slender wheatgrass	AGTR	10-15	---	---	---	---	X
Bearded wheatgrass	AGSU	10-15	---	---	---	---	---
Idaho fescue	FEID	5-15	1-10	10-20	10-20	---	X
Bluebunch wheatgrass	AGSP	5-10	20-50	---	---	---	---
Spike fescue	HEKI	2-15	---	---	---	---	---
Bulbous oniongrass	MEBU	2-5	---	---	---	---	X
Nevada bluegrass	PONE3	2-5	---	---	---	---	---
Basin wildrye	ELCI2	---	5-10	---	---	---	---
Thurber needlegrass	STTH2	---	2-5	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	5-10	5-10	---	---
Webber ricegrass	ORWE	---	---	5-10	5-10	---	---
Cusick bluegrass	POCU3	---	---	2-5	2-5	---	---
Sandberg bluegrass	POSE	---	---	2-5	2-5	---	---
Pine bluegrass	POSC	---	---	2-5	2-5	---	---
Other perennial grasses	PPGG	---	---	---	---	---	X
Geranium	GERAN	2-5	---	---	---	---	X
Groundsel	SENEC	2-5	---	---	---	---	---
Lupine	LUPIN	2-5	---	---	---	---	X
Tapertip hawksbeard	CRAC2	---	2-5	---	---	---	---
Arrowleaf balsamroot	BASA3	---	2-5	---	---	---	---
Goldenweed	HAPLO2	---	---	2-5	2-5	---	---
Phlox	PHLOX	---	---	2-5	2-5	---	---
Horsemint	AGUR	---	---	---	---	---	X
Columbine	AQUIL	---	---	---	---	---	X
Meadowrue	THALI2	---	---	---	---	---	X
Sweet cicely	OSMOR	---	---	---	---	---	X
Other perennial forbs	PPFF	---	---	---	---	---	X
Serviceberry	AMELA	5-10	---	---	---	---	---
Mountain big sagebrush	ARTRV	5-10	5-15	---	---	---	---
Snowberry	SYMPH	2-10	---	---	---	---	X
Low sagebrush	ARAR8	---	---	5-15	5-15	---	---
Black sagebrush	ARARN	---	---	5-15	5-15	---	---
Big sagebrush	ARTR2	---	---	---	---	---	X
Currant	RIBES	---	---	---	---	---	X
Quaking aspen	POTR5	---	---	---	---	---	X
Range site number		024X032N	024X029N	024X016N	024X016N	None	025X065N
Potential production (lb/acre):							
Favorable years		2,200	1,500	350	350	---	800
Normal years		1,700	1,100	250	250	---	600
Unfavorable years		1,200	800	150	150	---	400

482--Humdun-Havingdon-Bucan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Humdun	Havingdon	Bucan	1	2	3
Thurber needlegrass	STTH2	20-50	15-25	20-50	---	---	---
Bluebunch wheatgrass	AGSP	5-10	15-25	5-10	---	---	---
Basin wildrye	ELCI2	---	---	---	50-60	---	---
Nevada bluegrass	PONE3	---	---	---	5-15	---	---
Mat muhly	MURI	---	---	---	2-10	---	---
Sedge	CAREX	---	---	---	1-5	---	---
Idaho fescue	FEID	---	---	---	---	50-70	---
Cusick bluegrass	POCU3	---	---	---	---	2-10	---
Pine bluegrass	POSC	---	---	---	---	2-10	---
Sandberg bluegrass	POSE	---	---	---	---	2-5	---
Other perennial grasses	PPGG	---	10-20	---	15-20	---	---
balsamroot	BALSA	2-4	---	2-4	---	2-5	---
Tapertip hawksbeard	CRAC2	2-4	2-5	2-4	---	2-5	---
Arrowleaf balsamroot	BASA3	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	2-10	---	5-10	---	---
Wyoming big sagebrush	ARTRW*	15-20	5-10	15-20	---	2-5	---
Downy rabbitbrush	CHVIP	2-5	---	2-5	---	---	---
Spiny hopsage	GRSP	2-5	---	2-5	---	---	---
Mountain big sagebrush	ARTRV	---	5-10	---	---	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---	---
Rubber rabbitbrush	CHNA2	---	---	---	---	T-2	---
Douglas rabbitbrush	CHVI8	---	---	---	---	T-2	---
Other shrubs	SSSS	2-10	2-10	2-10	2-5	---	---
Range site number		024X005N	024X035N	024X005N	025X003N	024X033N	None
Potential production (lb/acre):							
Favorable years		800	500	800	2,500	800	---
Normal years		600	400	600	1,900	600	---
Unfavorable years		400	250	400	1,200	400	---

486--Havingdon-Burrita association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Havingdon	Burrita	1	2	3
Bluebunch wheatgrass	AGSP	15-25	5-10	5-10	---	40-60
Thurber needlegrass	STTH2	15-25	20-50	20-50	---	5-10
Bottlebrush squirreltail	SIHY	---	---	---	2-10	---
Desert needlegrass	STSP3	---	---	---	2-10	---
Indian ricegrass	ORHY	---	---	---	2-5	---
Sandberg bluegrass	POSE	---	---	---	1-3	---
Bluegrass	POA++	---	---	---	---	2-10
Basin wildrye	ELCI2	---	---	---	---	2-5
Other perennial grasses	PPGG	10-20	---	---	---	---
Tapertip hawksbeard	CRAC2	2-5	2-4	2-4	---	2-5
Arrowleaf balsamroot	BASA3	2-5	---	---	---	2-5
balsamroot	BALSA	---	2-4	2-4	---	---
Other perennial forbs	PPFF	2-10	---	---	2-8	---
Wyoming big sagebrush	ARTRW*	5-10	15-20	15-20	---	5-10
Mountain big sagebrush	ARTRV	5-10	---	---	---	T-5
Downy rabbitbrush	CHVIP	---	2-5	2-5	---	---
Spiny hopsage	GRSP	---	2-5	2-5	---	---
Shadscale	ATCO	---	---	---	30-50	---
Bud sagebrush	ARSP5	---	---	---	15-30	---
Other shrubs	SSSS	2-10	2-10	2-10	---	---
Range site number		024X035N	024X005N	024X005N	024X025N	024X028N
Potential production (lb/acre):						
Favorable years		500	800	800	250	1,000
Normal years		400	600	600	150	700
Unfavorable years		250	400	400	75	500

511--Hessing silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Hessing	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-5
Needleandthread	STC04	1-3	1-3	1-3	---	1-3
Other perennial grasses	PPGG	---	---	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-50	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	5-15	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	---	2-5
Winterfat	EULA5	2-5	2-5	2-5	---	2-5
Black greasewood	SAVE4	---	---	---	15-30	---
Seepweed	SUAED	---	---	---	2-15	---
Range site number		024X002N	024X002N	024X002N	024X003N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	700	600	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

512--Hessing-Relley association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Hessing	Relley	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	5-15	5-15	---
Indian ricegrass	ORHY	5-15	10-30	5-15	5-15	---
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	---
Needleandthread	STCO4	1-3	---	1-3	1-3	---
Alkali sacaton	SPAI	---	T-5	---	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60
Western wheatgrass	AGSM	---	---	---	---	5-15
Perennial forbs	PPFF	2-8	T-5	2-8	2-8	2-8
Shadscale	ATCO	30-40	---	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	---	20-30	20-30	---
Spiny hopsage	GRSP	2-5	---	2-5	2-5	---
Winterfat	EULA5	2-5	---	2-5	2-5	---
Saltbush	ATRIP	---	50-65	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-20
Black greasewood	SAVE4	---	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Range site number		O24XOO2N	O24XO12N	O24XOO2N	O24XOO2N	O24XOO6N
Potential production (lb/acre):						
Favorable years		700	700	700	700	1,500
Normal years		450	400	450	450	1,100
Unfavorable years		300	200	300	300	600

530--Humboldt fine sandy loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Humboldt	1	2	3
Wildrye	ELMYU	30-60	30-60	30-60	30-60
Nevada bluegrass	PONE3	5-10	5-10	5-10	5-10
Inland saltgrass	DIST	5-10	5-10	5-10	5-10
Mat muhly	MURI	2-10	2-10	2-10	2-10
Other perennial grasses	PPGG	5-15	5-15	5-15	5-15
Sierra clover	TRWO	2-5	2-5	2-5	2-5
Other perennial forbs	PPFF	5-10	5-10	5-10	5-10
Willow	SALIX	5-10	5-10	5-10	5-10
Basin big sagebrush	ARTRT*	2-5	2-5	2-5	2-5
Silver sagebrush	ARCA13	2-5	2-5	2-5	2-5
Other shrubs	SSSS	2-8	2-8	2-8	2-8
Range site number		025X001N	025X001N	025X001N	025X001N
Potential production (lb/acre):					
Favorable years		3,000	3,000	3,000	3,000
Normal years		2,500	2,500	2,500	2,500
Unfavorable years		1,800	1,800	1,800	1,800

531--Humboldt silty clay

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Humboldt	1	2	3
Wildrye	ELMYU	30-60	30-60	30-60	30-60
Nevada bluegrass	PONE3	5-10	5-10	5-10	5-10
Inland saltgrass	DIST	5-10	5-10	5-10	5-10
Mat muhly	MURI	2-10	2-10	2-10	2-10
Other perennial grasses	PPGG	5-15	5-15	5-15	5-15
Sierra clover	TRWO	2-5	2-5	2-5	2-5
Other perennial forbs	PPFF	5-10	5-10	5-10	5-10
Willow	SALIX	5-10	5-10	5-10	5-10
Basin big sagebrush	ARTRT*	2-5	2-5	2-5	2-5
Silver sagebrush	ARCA13	2-5	2-5	2-5	2-5
Other shrubs	SSSS	2-8	2-8	2-8	2-8
Range site number		025X001N	025X001N	025X001N	025X001N
Potential production (lb/acre):					
Favorable years		3,000	3,000	3,000	3,000
Normal years		2,500	2,500	2,500	2,500
Unfavorable years		1,800	1,800	1,800	1,800

532--Humboldt silty clay loam, slightly saline

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Humboldt	1	2	3
Wildrye	ELMYU	30-60	30-60	---	---
Nevada bluegrass	PONE3	5-10	5-10	---	---
Inland saltgrass	DIST	5-10	5-10	---	5-10
Mat muhly	MURI	2-10	2-10	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---
Alkali sacaton	SPAI	---	---	---	15-40
Alkali muhly	MUAS	---	---	---	10-20
Alkali bluegrass	POJU	---	---	---	5-15
Alkali cordgrass	SPGR	---	---	---	5-10
Basin wildrye	ELCI2	---	---	---	2-5
Arrowgrass	TRIGL	---	---	---	1-3
Other perennial grasses	PPGG	5-15	5-15	T-10	---
Sierra clover	TRWO	2-5	2-5	---	---
Other perennial forbs	PPFF	5-10	5-10	2-8	---
Willow	SALIX	5-10	5-10	---	T-2
Basin big sagebrush	ARTRT*	2-5	2-5	---	---
Silver sagebrush	ARCA13	2-5	2-5	---	---
Shadscale	ATCO	---	---	30-50	---
Black greasewood	SAVE4	---	---	15-30	T-2
Bud sagebrush	ARSP5	---	---	5-15	---
Seepweed	SUAED	---	---	2-15	---
Silver buffaloberry	SHAR	---	---	---	T-2
Rubber rabbitbrush	CHNA2	---	---	---	T-2
Woods rose	ROWO	---	---	---	T-2
Other shrubs	SSSS	2-8	2-8	---	---
Range site number		025X001N	025X001N	024X003N	024X009N
Potential production (lb/acre):					
Favorable years		3,000	3,000	600	1,500
Normal years		2,500	2,500	450	1,000
Unfavorable years		1,800	1,800	300	700

571--Jenor-Blacka very fine sandy loams

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Jenor	Blacka	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5
Range site number		024X002N	024X002N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

573--Jenor-Beoska-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Jenor	Beoska	Broyles	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	5-15	2-5
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15	2-5
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-5	---
Needleandthread	STCO4	1-3	1-3	1-3	---	1-3	2-5
Thurber needlegrass	STTH2	---	---	---	10-20	---	---
Basin wildrye	ELCI2	---	---	---	---	---	10-20
Other perennial grasses	PPGG	---	---	---	---	---	5-10
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---	---
Globemallow	SPHAE	---	---	---	1-2	---	---
Phlox	PHLOX	---	---	---	1-2	---	---
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8	5-10
Shadscale	ATCO	30-40	30-40	30-40	---	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	20-30	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5	---
Winterfat	EULA5	2-5	2-5	2-5	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Greene rabbitbrush	CHGR6	---	---	---	---	---	2-5
Nevada ephedra	EPNE	---	---	---	---	---	2-5
Fourwing saltbush	ATCA2	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	---	5-10
Range site number		O24XO02N	O24XO02N	O24XO02N	O24XO20N	O24XO02N	O28BO09N
Potential production (lb/acre):							
Favorable years		700	700	700	700	700	700
Normal years		450	450	450	450	450	400
Unfavorable years		300	300	300	300	300	300

590--Landco silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Landco	1	2	3
Indian ricegrass	ORHY	10-30	---	---	10-30
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10
Alkali sacaton	SPAI	T-5	---	---	T-5
Other perennial grasses	PPGG	---	T-10	T-10	---
Perennial forbs	PPFF	T-5	2-8	2-8	T-5
Saltbush	ATRIP	50-65	---	---	50-65
Shadscale	ATCO	---	30-50	30-50	---
Black greasewood	SAVE4	---	15-30	15-30	---
Bud sagebrush	ARSP5	---	5-15	5-15	---
Seepweed	SUAED	---	2-15	2-15	---
Range site number		024X012N	024X003N	024X003N	024X012N
Potential production (lb/acre):					
Favorable years		700	600	600	700
Normal years		400	450	450	400
Unfavorable years		200	300	300	200

602--Misad gravelly sandy loam, strongly saline-sodic

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Misad	1	2
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10
Other perennial grasses	PPGG	T-10	T-10	T-10
Perennial forbs	PPFF	2-8	2-8	2-8
Shadscale	ATCO	30-50	30-50	30-50
Black greasewood	SAVE4	15-30	15-30	15-30
Bud sagebrush	ARSP5	5-15	5-15	5-15
Seepweed	SUAED	2-15	2-15	2-15
Range site number		024X003N	024X003N	024X003N
Potential production (lb/acre):				
Favorable years		600	600	600
Normal years		450	450	450
Unfavorable years		300	300	300

605--Misad-Creemon-Rednik association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Misad	Creemon	Rednik	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-5
Needleandthread	STCO4	1-3	1-3	1-3	---	1-3
Thurber needlegrass	STTH2	---	---	---	10-20	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	2-5	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	---
Range site number		024X002N	024X002N	024X002N	024X020N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

631--McConnel-Tulase association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		McConnel	Tulase	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	---	---	---
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---	---
Basin wildrye	ELCI2	---	---	50-60	5-20	---
Western wheatgrass	AGSM	---	---	5-15	---	---
Bottlebrush squirreltail	SIHY	---	---	---	2-5	5-10
Indian ricegrass	ORHY	---	---	---	2-5	---
Other perennial grasses	PPGG	---	---	---	---	T-10
Balsamroot	BALSA	2-4	2-4	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	---	---
Thelypody	THELY	---	---	---	2-4	---
Other perennial forbs	PPFF	---	---	2-8	---	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	5-10	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---
Spiny hopsage	GRSP	2-5	2-5	---	5-15	---
Basin big sagebrush	ARTRT*	---	---	15-20	5-15	---
Black greasewood	SAVE4	---	---	2-10	20-30	15-30
Rubber rabbitbrush	CHNA2	---	---	2-5	---	---
Shadscale	ATCO	---	---	---	---	30-50
Bud sagebrush	ARSP5	---	---	---	---	5-15
Seepweed	SUAED	---	---	---	---	2-15
Other shrubs	SSSS	2-10	2-10	---	---	---
Range site number		024X005N	024X005N	024X006N	024X022N	024X003N
Potential production (lb/acre):						
Favorable years		800	800	1,500	800	600
Normal years		600	600	1,100	600	450
Unfavorable years		400	400	600	350	300

660--Needle Peak silt loam, occasionally flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Needle Peak	1	2	3
Basin wildrye	ELCI2	50-60	50-60	---	---
Western wheatgrass	AGSM	5-15	5-15	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	5-15
Indian ricegrass	ORHY	---	---	---	5-15
Sandberg bluegrass	POSE	---	---	---	2-5
Needleandthread	STCO4	---	---	---	1-3
Other perennial grasses	PPGG	---	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Basin big sagebrush	ARTRT*	15-20	15-20	---	---
Black greasewood	SAVE4	2-10	2-10	15-30	---
Rubber rabbitbrush	CHNA2	2-5	2-5	---	---
Shadscale	ATCO	---	---	30-50	30-40
Bud sagebrush	ARSP5	---	---	5-15	20-30
Seepweed	SUAED	---	---	2-15	---
Spiny hopsage	GRSP	---	---	---	2-5
Winterfat	EULA5	---	---	---	2-5
Range site number		024X006N	024X006N	024X003N	024X002N
Potential production (lb/acre):					
Favorable years		1,500	1,500	600	700
Normal years		1,100	1,100	450	450
Unfavorable years		600	600	300	300

670--Filiran-Pineval-Kingingham association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Filiran	Pineval	Kingingham	1	2
Indian ricegrass	ORHY	20-30	20-30	5-15	20-30	20-30
Needleandthread	STCO4	10-20	10-20	1-3	10-20	10-20
Bottlebrush squirreltail	SIHY	5-10	5-10	5-15	5-10	5-10
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5
Perennial forbs	PPFF	2-5	2-5	2-8	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	15-20	15-20
Shadscale	ATCO	---	---	30-40	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---
Spiny hopsage	GRSP	---	---	2-5	---	---
Winterfat	EULA5	---	---	2-5	---	---
Other shrubs	SSSS	5-15	5-15	---	5-15	5-15
Range site number		O28BO10N	O28BO10N	O24XO02N	O28BO10N	O28BO10N
Potential production (lb/acre):						
Favorable years		800	800	700	800	800
Normal years		600	600	450	600	600
Unfavorable years		400	400	300	400	400

680--Skullwak-Umberland-Wendane association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Skullwak	Umberland	Wendane	1	2	3
Inland saltgrass	DIST	10-25	5-10	5-10	---	---	---
Nuttall alkaligrass	PUAI	5-10	---	---	---	---	---
Baltic rush	JUBA	5-10	---	---	---	---	---
Basin wildrye	ELCI2	---	5-15	40-60	---	---	---
Alkali sacaton	SPAI	---	---	15-30	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10	---
Other perennial grasses	PPGG	---	---	---	---	T-10	---
Cinquefoil	POTEN	5-10	---	---	---	---	---
Eriogonum	ERIOG	2-5	---	---	---	---	---
Other perennial forbs	PPFF	---	T-5	---	---	2-8	---
Alkali rabbitbrush	CHAL9	20-35	---	1-2	---	---	---
Black greasewood	SAVE4	T-5	60-75	5-15	---	15-30	---
Rubber rabbitbrush	CHNA2	T-5	---	1-2	---	---	---
Shadscale	ATCO	---	---	---	---	30-50	---
Bud sagebrush	ARSP5	---	---	---	---	5-15	---
Seepweed	SUAED	---	---	---	---	2-15	---
Range site number		024X044N	024X011N	024X007N	None	024X003N	None
Potential production (lb/acre):							
Favorable years		350	500	1,900	---	600	---
Normal years		225	350	1,400	---	450	---
Unfavorable years		150	200	800	---	300	---

684--Ocala silt loam, occasionally flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Ocala	1	2	3
Basin wildrye	ELCI2	40-60	---	50-60	5-15
Alkali sacaton	SPAI	15-30	---	---	---
Inland saltgrass	DIST	5-10	---	---	5-10
Bottlebrush squirreltail	SIHY	---	5-10	---	---
Western wheatgrass	AGSM	---	---	5-15	---
Other perennial grasses	PPGG	---	T-10	---	---
Perennial forbs	PPFF	---	2-8	2-8	T-5
Black greasewood	SAVE4	5-15	15-30	2-10	60-75
Alkali rabbitbrush	CHAL9	1-2	---	---	---
Rubber rabbitbrush	CHNA2	1-2	---	2-5	---
Shadscale	ATCO	---	30-50	---	---
Bud sagebrush	ARSP5	---	5-15	---	---
Seepweed	SUAED	---	2-15	---	---
Basin big sagebrush	ARTRT*	---	---	15-20	---
Range site number		024X007N	024X003N	024X006N	024X011N
Potential production (lb/acre):					
Favorable years		1,900	600	1,500	500
Normal years		1,400	450	1,100	350
Unfavorable years		800	300	600	200

700--Orovada fine sandy loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Orovada	1	2	3	4
Thurber needlegrass	STTH2	10-20	---	---	---	---
Indian ricegrass	ORHY	5-15	5-15	5-15	10-20	20-40
Bottlebrush squirreltail	SIHY	2-10	5-15	5-15	2-5	---
Sandberg bluegrass	POSE	2-10	2-5	2-5	---	---
Needleandthread	STCO4	---	1-3	1-3	20-30	5-15
Thickspike wheatgrass	AGDA	---	---	---	2-10	2-10
Basin wildrye	ELCI2	---	---	---	---	2-10
Tapertip hawksbeard	CRAC2	1-2	---	---	---	---
Globemallow	SPHAE	1-2	---	---	---	---
Phlox	PHLOX	1-2	---	---	---	---
Lemon scurfpea	PSLA	---	---	---	---	2-5
Tufted eveningprimrose	OECA	---	---	---	---	2-4
Other perennial forbs	PPFF	---	2-8	2-8	10-20	---
Wyoming big sagebrush	ARTRW*	30-35	---	---	T-5	---
Spiny hopsage	GRSP	5-15	2-5	2-5	T-5	5-10
Shadscale	ATCO	---	30-40	30-40	---	---
Bud sagebrush	ARSP5	---	20-30	20-30	---	---
Winterfat	EULA5	---	2-5	2-5	---	---
Basin big sagebrush	ARTRT*	---	---	---	5-15	10-20
Fourwing saltbush	ATCA2	---	---	---	---	2-10
Hairy horsebrush	TECO2	---	---	---	---	5-8
Black greasewood	SAVE4	---	---	---	---	2-8
Rubber rabbitbrush	CHNA2	---	---	---	---	1-5
Range site number		024X020N	024X002N	024X002N	024X017N	024X001N
Potential production (lb/acre):						
Favorable years		700	700	700	900	800
Normal years		450	450	450	700	500
Unfavorable years		300	300	300	500	300

701--Orovada fine sandy loam, 2 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Orovada	1	2	3
Thurber needlegrass	STTH2	10-20	---	---	---
Indian ricegrass	ORHY	5-15	5-15	5-15	10-20
Bottlebrush squirreltail	SIHY	2-10	5-15	5-15	2-5
Sandberg bluegrass	POSE	2-10	2-5	2-5	---
Needleandthread	STCO4	---	1-3	1-3	20-30
Thickspike wheatgrass	AGDA	---	---	---	2-10
Tapertip hawksbeard	CRAC2	1-2	---	---	---
Globemallow	SPHAE	1-2	---	---	---
Phlox	PHLOX	1-2	---	---	---
Other perennial forbs	PPFF	---	2-8	2-8	10-20
Wyoming big sagebrush	ARTRW*	30-35	---	---	T-5
Spiny hopsage	GRSP	5-15	2-5	2-5	T-5
Shadscale	ATCO	---	30-40	30-40	---
Bud sagebrush	ARSP5	---	20-30	20-30	---
Winterfat	EULA5	---	2-5	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	5-15
Range site number		O24XO20N	O24XO02N	O24XO02N	O24XO17N
Potential production (lb/acre):					
Favorable years		700	700	700	900
Normal years		450	450	450	700
Unfavorable years		300	300	300	500

702--Orovada fine sandy loam, cemented substratum, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Orovada	1	2	3	4
Thurber needlegrass	STTH2	10-20	---	---	---	---
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	10-20
Bottlebrush squirreltail	SIHY	2-10	5-15	5-15	5-15	2-5
Sandberg bluegrass	POSE	2-10	2-5	2-5	2-5	---
Needleandthread	STCO4	---	1-3	1-3	1-3	20-30
Thickspike wheatgrass	AGDA	---	---	---	---	2-10
Tapertip hawksbeard	CRAC2	1-2	---	---	---	---
Globemallow	SPHAE	1-2	---	---	---	---
Phlox	PHLOX	1-2	---	---	---	---
Other perennial forbs	PPFF	---	2-8	2-8	2-8	10-20
Wyoming big sagebrush	ARTRW*	30-35	---	---	---	T-5
Spiny hopsage	GRSP	5-15	2-5	2-5	2-5	T-5
Shadscale	ATCO	---	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	---	20-30	20-30	20-30	---
Winterfat	EULA5	---	2-5	2-5	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-15
Range site number		024XO20N	024XO02N	024XO02N	024XO02N	024XO17N
Potential production (lb/acre):						
Favorable years		700	700	700	700	900
Normal years		450	450	450	450	700
Unfavorable years		300	300	300	300	500

703--Orovada-Goldrun complex

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Orovada	Goldrun	1	2
Thurber needlegrass	STTH2	10-20	---	---	---
Indian ricegrass	ORHY	5-15	20-40	5-15	10-20
Bottlebrush squirreltail	SIHY	2-10	---	5-15	2-5
Sandberg bluegrass	POSE	2-10	---	2-5	---
Needleandthread	STCO4	---	5-15	1-3	20-30
Basin wildrye	ELCI2	---	2-10	---	---
Thickspike wheatgrass	AGDA	---	2-10	---	2-10
Tapertip hawksbeard	CRAC2	1-2	---	---	---
Globemallow	SPHAE	1-2	---	---	---
Phlox	PHLOX	1-2	---	---	---
Lemon scurfpea	PSLA	---	2-5	---	---
Tufted eveningprimrose	OECA	---	2-4	---	---
Other perennial forbs	PPFF	---	---	2-8	10-20
Wyoming big sagebrush	ARTRW*	30-35	---	---	T-5
Spiny hopsage	GRSP	5-15	5-10	2-5	T-5
Basin big sagebrush	ARTRT*	---	10-20	---	5-15
Fourwing saltbush	ATCA2	---	2-10	---	---
Hairy horsebrush	TECO2	---	5-8	---	---
Black greasewood	SAVE4	---	2-8	---	---
Rubber rabbitbrush	CHNA2	---	1-5	---	---
Shadscale	ATCO	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	20-30	---
Winterfat	EULA5	---	---	2-5	---
Range site number		O24XO20N	O24XO01N	O24XO02N	O24XO17N
Potential production (lb/acre):					
Favorable years		700	800	700	900
Normal years		450	500	450	700
Unfavorable years		300	300	300	500

704--Orovada-Kodra-Puett association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Orovada	Kodra	Puett	1	2
Thurber needlegrass	STTH2	20-50	20-50	---	---	20-50
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---	5-10
Indian ricegrass	ORHY	---	---	10-30	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---
Other perennial grasses	PPGG	---	---	10-20	---	---
balsamroot	BALSA	2-4	2-4	---	---	2-4
Tapertip hawksbeard	CRAC2	2-4	2-4	---	---	2-4
Other perennial forbs	PPFF	---	---	5-15	---	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	10-25	---	15-20
Downy rabbitbrush	CHVIP	2-5	2-5	1-5	---	2-5
Spiny hopsage	GRSP	2-5	2-5	1-5	---	2-5
Antelope bitterbrush	PUTR2	---	---	1-5	---	---
Black sagebrush	ARARN	---	---	5-15	---	---
Purple sage	SACA9	---	---	T-5	---	---
Other shrubs	SSSS	2-10	2-10	2-4	---	2-10
Range site number		024X005N	024X005N	025X025N	None	024X005N
Potential production (lb/acre):						
Favorable years		800	800	200	---	800
Normal years		600	600	150	---	600
Unfavorable years		400	400	100	---	400

705--Orovada-Creemon complex

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Orovada	Creemon	1	2
Thurber needlegrass	STTH2	10-20	---	---	---
Indian ricegrass	ORHY	5-15	5-15	5-15	10-20
Bottlebrush squirreltail	SIHY	2-10	5-15	5-15	2-5
Sandberg bluegrass	POSE	2-10	2-5	2-5	---
Needleandthread	STCO4	---	1-3	1-3	20-30
Thickspike wheatgrass	AGDA	---	---	---	2-10
Tapertip hawksbeard	CRAC2	1-2	---	---	---
Globemallow	SPHAE	1-2	---	---	---
Phlox	PHLOX	1-2	---	---	---
Other perennial forbs	PPFF	---	2-8	2-8	10-20
Wyoming big sagebrush	ARTRW*	30-35	---	---	T-5
Spiny hopsage	GRSP	5-15	2-5	2-5	T-5
Shadscale	ATCO	---	30-40	30-40	---
Bud sagebrush	ARSP5	---	20-30	20-30	---
Winterfat	EULA5	---	2-5	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	5-15
Range site number		O24XO20N	O24XOO2N	O24XOO2N	O24XO17N
Potential production (lb/acre):					
Favorable years		700	700	700	900
Normal years		450	450	450	700
Unfavorable years		300	300	300	500

706--Orovada-Wieland-Chiara association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Orovada	Wieland	Chiara	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	20-50	20-50	---	---
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	5-10	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60	10-20
Nevada bluegrass	PONE3	---	---	---	---	5-15	---
Mat muhly	MURI	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	1-5	---
Indian ricegrass	ORHY	---	---	---	---	---	2-10
Bottlebrush squirreltail	SIHY	---	---	---	---	---	2-5
Sandberg bluegrass	POSE	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	15-20	---
balsamroot	BALSA	2-4	2-4	2-4	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	2-4	---	---
Other perennial forbs	PPFF	---	---	---	---	5-10	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	---	15-30
Basin big sagebrush	ARTRT*	---	---	---	---	10-15	15-25
Black greasewood	SAVE4	---	---	---	---	---	2-10
Anderson peachbrush	PRAN2	---	---	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	2-10	2-10	2-10	2-10	2-5	---
Range site number		024X005N	024X005N	024X005N	024X005N	025X003N	024X041N
Potential production (lb/acre):							
Favorable years		800	800	800	800	2,500	1,000
Normal years		600	600	600	600	1,900	800
Unfavorable years		400	400	400	400	1,200	600

707--Orovada-Goldrun association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Orovada	Goldrun	1	2	3
ıurber needlegrass	STTH2	20-50	---	20-50	20-50	---
luebunch wheatgrass	AGSP	5-10	---	5-10	5-10	---
ıdian ricegrass	ORHY	---	20-40	---	---	---
eedleandthread	STCO4	---	5-15	---	---	---
asin wildrye	ELCI2	---	2-10	---	---	---
ıickspike wheatgrass	AGDA	---	2-10	---	---	---
alsamroot	BALSA	2-4	---	2-4	2-4	---
apertip hawksbeard	CRAC2	2-4	---	2-4	2-4	---
emon scurfpea	PSLA	---	2-5	---	---	---
ufted eveningprimrose	OECA	---	2-4	---	---	---
yoming big sagebrush	ARTRW*	15-20	---	15-20	15-20	---
owny rabbitbrush	CHVIP	2-5	---	2-5	2-5	---
piny hopsage	GRSP	2-5	5-10	2-5	2-5	---
asin big sagebrush	ARTRT*	---	10-20	---	---	---
ourwing saltbush	ATCA2	---	2-10	---	---	---
airy horsebrush	TECO2	---	5-8	---	---	---
lack greasewood	SAVE4	---	2-8	---	---	---
ubber rabbitbrush	CHNA2	---	1-5	---	---	---
ther shrubs	SSSS	2-10	---	2-10	2-10	---
ange site number		O24XOO5N	O24XOO1N	O24XOO5N	O24XOO5N	None
otential production (lb/acre):						
Favorable years		800	800	800	800	---
Normal years		600	500	600	600	---
Unfavorable years		400	300	400	400	---

708--Orovada-Reina-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Orovada	Reina	Rock outcrop	1	2
Thurber needlegrass	STTH2	10-20	20-50	---	20-50	20-50
Indian ricegrass	ORHY	5-15	---	---	---	---
Bottlebrush squirreltail	SIHY	2-10	---	---	---	---
Sandberg bluegrass	POSE	2-10	---	---	---	---
Bluebunch wheatgrass	AGSP	---	5-10	---	5-10	5-10
Tapertip hawksbeard	CRAC2	1-2	2-4	---	2-4	2-4
Globemallow	SPHAE	1-2	---	---	---	---
Phlox	PHLOX	1-2	---	---	---	---
balsamroot	BALSA	---	2-4	---	2-4	2-4
Wyoming big sagebrush	ARTRW*	30-35	15-20	---	15-20	15-20
Spiny hopsage	GRSP	5-15	2-5	---	2-5	2-5
Downy rabbitbrush	CHVIP	---	2-5	---	2-5	2-5
Other shrubs	SSSS	---	2-10	---	2-10	2-10
Range site number		024X020N	024X005N	None	024X005N	024X005N
Potential production (lb/acre):						
Favorable years		700	800	---	800	800
Normal years		450	600	---	600	600
Unfavorable years		300	400	---	400	400

709--Orovada-Sodhouse association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name		Inclusion number--
		Orovada	Sodhouse	1
Thurber needlegrass	STTH2	10-20	---	20-50
Indian ricegrass	ORHY	5-15	5-15	---
Bottlebrush squirreltail	SIHY	2-10	5-15	---
Sandberg bluegrass	POSE	2-10	2-5	---
Needleandthread	STCO4	---	1-3	---
Bluebunch wheatgrass	AGSP	---	---	5-10
Tapertip hawksbeard	CRAC2	1-2	---	2-4
Globemallow	SPHAE	1-2	---	---
Phlox	PHLOX	1-2	---	---
balsamroot	BALSA	---	---	2-4
Other perennial forbs	PPFF	---	2-8	---
Wyoming big sagebrush	ARTRW*	30-35	---	15-20
Spiny hopsage	GRSP	5-15	2-5	2-5
Shadscale	ATCO	---	30-40	---
Bud sagebrush	ARSP5	---	20-30	---
Winterfat	EULA5	---	2-5	---
Downy rabbitbrush	CHVIP	---	---	2-5
Other shrubs	SSSS	---	---	2-10
Range site number		O24XO20N	O24XOO2N	O24XOO5N
Potential production (lb/acre):				
Favorable years		700	700	800
Normal years		450	450	600
Unfavorable years		300	300	400

711--Paranat silty clay loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Paranat	1	2	3
Wildrye	ELMYU	30-60	30-60	30-60	30-60
Nevada bluegrass	PONE3	5-10	5-10	5-10	5-10
Inland saltgrass	DIST	5-10	5-10	5-10	5-10
Mat muhly	MURI	2-10	2-10	2-10	2-10
Other perennial grasses	PPGG	5-15	5-15	5-15	5-15
Sierra clover	TRWO	2-5	2-5	2-5	2-5
Other perennial forbs	PPFF	5-10	5-10	5-10	5-10
Willow	SALIX	5-10	5-10	5-10	5-10
Basin big sagebrush	ARTRT*	2-5	2-5	2-5	2-5
Silver sagebrush	ARCA13	2-5	2-5	2-5	2-5
Other shrubs	SSSS	2-8	2-8	2-8	2-8
Range site number		025X001N	025X001N	025X001N	025X001N
Potential production (lb/acre):					
Favorable years		3,000	3,000	3,000	3,000
Normal years		2,500	2,500	2,500	2,500
Unfavorable years		1,800	1,800	1,800	1,800

713--Paranat silty clay loam, drained

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Paranat	1	2
Basin wildrye	ELCI2	40-60	40-60	40-60
Alkali sacaton	SPAI	15-30	15-30	15-30
Inland saltgrass	DIST	5-10	5-10	5-10
Black greasewood	SAVE4	5-15	5-15	5-15
Alkali rabbitbrush	CHAL9	1-2	1-2	1-2
Rubber rabbitbrush	CHNA2	1-2	1-2	1-2
Range site number		024X007N	024X007N	024X007N
Potential production (lb/acre):				
Favorable years		1,900	1,900	1,900
Normal years		1,400	1,400	1,400
Unfavorable years		800	800	800

714--Paranat silty clay loam, occasionally flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Paranat	1	2
Basin wildrye	ELCI2	40-60	---	2-5
Alkali sacaton	SPAI	15-30	---	15-40
Inland saltgrass	DIST	5-10	5-10	5-10
Wildrye	ELMYU	---	30-60	---
Nevada bluegrass	PONE3	---	5-10	---
Mat muhly	MURI	---	2-10	---
Alkali muhly	MUAS	---	---	10-20
Alkali bluegrass	POJU	---	---	5-15
Alkali cordgrass	SPGR	---	---	5-10
Arrowgrass	TRIGL	---	---	1-3
Other perennial grasses	PPGG	---	5-15	---
Sierra clover	TRWO	---	2-5	---
Other perennial forbs	PPFF	---	5-10	---
Black greasewood	SAVE4	5-15	---	T-2
Alkali rabbitbrush	CHAL9	1-2	---	---
Rubber rabbitbrush	CHNA2	1-2	---	T-2
Willow	SALIX	---	5-10	T-2
Basin big sagebrush	ARTRT*	---	2-5	---
Silver sagebrush	ARCA13	---	2-5	---
Silver buffaloberry	SHAR	---	---	T-2
Woods rose	ROWO	---	---	T-2
Other shrubs	SSSS	---	2-8	---
Range site number		024X007N	025X001N	024X009N
Potential production (lb/acre):				
Favorable years		1,900	3,000	1,500
Normal years		1,400	2,500	1,000
Unfavorable years		800	1,800	700

731--Yipor silt loam, moderately saline-sodic

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Yipor	1	2	3
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10
Indian ricegrass	ORHY	---	---	10-30	10-30
Alkali sacaton	SPAI	---	---	T-5	T-5
Other perennial grasses	PPGG	T-10	T-10	---	---
Perennial forbs	PPFF	2-8	2-8	T-5	T-5
Shadscale	ATCO	30-50	30-50	---	---
Black greasewood	SAVE4	15-30	15-30	---	---
Bud sagebrush	ARSP5	5-15	5-15	---	---
Seepweed	SUAED	2-15	2-15	---	---
Saltbush	ATRIP	---	---	50-65	50-65
Range site number		024X003N	024X003N	024X012N	024X012N
Potential production (lb/acre):					
Favorable years		600	600	700	700
Normal years		450	450	400	400
Unfavorable years		300	300	200	200

770--Prida silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Prida	1	2	3	4
Alkali sacaton	SPAI	40-70	15-30	---	---	40-70
Inland saltgrass	DIST	T-15	5-10	---	---	T-15
Basin wildrye	ELCI2	T-5	40-60	---	---	T-5
Bottlebrush squirreltail	SIHY	---	---	5-10	5-10	---
Other perennial grasses	PPGG	---	---	T-10	T-10	---
Perennial forbs	PPFF	2-8	---	2-8	2-8	2-8
Iodinebush	ALOC2	10-20	---	---	---	10-20
Saltbush	ATRIP	5-10	---	---	---	5-10
Black greasewood	SAVE4	2-5	5-15	15-30	15-30	2-5
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---
Rubber rabbitbrush	CHNA2	---	1-2	---	---	---
Shadscale	ATCO	---	---	30-50	30-50	---
Bud sagebrush	ARSP5	---	---	5-15	5-15	---
Seepweed	SUAED	---	---	2-15	2-15	---
Range site number		O24XO10N	O24XO07N	O24XO03N	O24XO03N	O24XO10N
Potential production (lb/acre):						
Favorable years		450	1,900	600	600	450
Normal years		300	1,400	450	450	300
Unfavorable years		150	800	300	300	150

774--Prida-Sonoma silty clay loams

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Prida	Sonoma	1	2
Alkali sacaton	SPAI	40-70	15-40	15-30	---
Inland saltgrass	DIST	T-15	5-10	5-10	---
Basin wildrye	ELCI2	T-5	2-5	40-60	---
Alkali muhly	MUAS	---	10-20	---	---
Alkali bluegrass	POJU	---	5-15	---	---
Alkali cordgrass	SPGR	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10
Arrowgrass	TRIGL	---	1-3	---	---
Other perennial grasses	PPGG	---	---	---	T-10
Perennial forbs	PPFF	2-8	---	---	2-8
Iodinebush	ALOC2	10-20	---	---	---
Saltbush	ATRIP	5-10	---	---	---
Black greasewood	SAVE4	2-5	T-2	5-15	15-30
Silver buffaloberry	SHAR	---	T-2	---	---
Willow	SALIX	---	T-2	---	---
Rubber rabbitbrush	CHNA2	---	T-2	1-2	---
Woods rose	ROWO	---	T-2	---	---
Alkali rabbitbrush	CHAL9	---	---	1-2	---
Shadscale	ATCO	---	---	---	30-50
Bud sagebrush	ARSP5	---	---	---	5-15
Seepweed	SUAED	---	---	---	2-15
Range site number		O24XO10N	O24XO09N	O24XO07N	O24XO03N
Potential production (lb/acre):					
Favorable years		450	1,500	1,900	600
Normal years		300	1,000	1,400	450
Unfavorable years		150	700	800	300

780--Pumper silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Pumper	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5
Range site number		O24XO02N	O24XO02N	O24XO02N	O24XO02N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

800--Raglan silt loam, gravelly substratum

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Raglan	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5
Range site number		024X002N	024X002N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

804--Raglan silty clay loam, moderately saline

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Raglan	1	2	3	4
Bottlebrush squirreltail	SIHY	5-10	5-15	5-15	5-15	5-10
Indian ricegrass	ORHY	---	5-15	5-15	5-15	10-30
Sandberg bluegrass	POSE	---	2-5	2-5	2-5	---
Needleandthread	STCO4	---	1-3	1-3	1-3	---
Alkali sacaton	SPAI	---	---	---	---	T-5
Other perennial grasses	PPGG	T-10	---	---	---	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	T-5
Shadscale	ATCO	30-50	30-40	30-40	30-40	---
Black greasewood	SAVE4	15-30	---	---	---	---
Bud sagebrush	ARSP5	5-15	20-30	20-30	20-30	---
Seepweed	SUAED	2-15	---	---	---	---
Spiny hopsage	GRSP	---	2-5	2-5	2-5	---
Winterfat	EULA5	---	2-5	2-5	2-5	---
Saltbush	ATRIP	---	---	---	---	50-65
Range site number		024X003N	024X002N	024X002N	024X002N	024X012N
Potential production (lb/acre):						
Favorable years		600	700	700	700	700
Normal years		450	450	450	450	400
Unfavorable years		300	300	300	300	200

805--Raglan silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Raglan	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	5-10	5-15
Indian ricegrass	ORHY	5-15	5-15	---	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	---	2-5
Needleandthread	STCO4	1-3	1-3	---	---	1-3
Other perennial grasses	PPGG	---	---	T-10	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-50	30-50	30-40
Bud sagebrush	ARSP5	20-30	20-30	5-15	5-15	20-30
Spiny hopsage	GRSP	2-5	2-5	---	---	2-5
Winterfat	EULA5	2-5	2-5	---	---	2-5
Black greasewood	SAVE4	---	---	15-30	15-30	---
Seepweed	SUAED	---	---	2-15	2-15	---
Range site number		O24XO02N	O24XO02N	O24XO03N	O24XO03N	O24XO02N
Potential production (lb/acre):						
Favorable years		700	700	600	600	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

814--Quarz-Linrose-Slaven association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Quarz	Linrose	Slaven	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	2-10	20-50	---	5-10	---	---
Basin wildrye	ELCI2	5-10	---	5-10	---	---	---	---
Mountain brome	BRMA4	2-15	---	2-15	---	2-5	---	---
Thurber needlegrass	STTH2	2-5	---	2-5	---	---	---	---
Bottlebrush squirreltail	SIHY	2-5	---	2-5	5-10	---	---	---
Idaho fescue	FEID	1-10	30-60	1-10	10-20	30-60	---	---
Cusick bluegrass	POCU3	---	5-10	---	2-5	5-10	---	---
Webber ricegrass	ORWE	---	---	---	5-10	---	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---	---
Sedge	CAREX	---	---	---	---	2-5	---	---
Tapertip hawksbeard	CRAC2	2-5	2-5	2-5	---	1-3	---	---
Arrowleaf balsamroot	BASA3	2-5	---	2-5	---	---	---	---
Goldenweed	HAPLO2	---	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	---	2-5	---	---	---
Lupine	LUPIN	---	---	---	---	1-2	---	---
Mountain big sagebrush	ARTRV	5-15	---	5-15	---	5-15	---	---
Black sagebrush	ARARN	---	10-20	---	5-15	---	---	---
Low sagebrush	ARAR8	---	---	---	5-15	---	---	---
Snowberry	SYMPH	---	---	---	---	2-5	---	---
Range site number		024X029N	024X042N	024X029N	024X016N	024X023N	None	None
Potential production (lb/acre):								
Favorable years		1,500	1,000	1,500	350	1,500	---	---
Normal years		1,100	800	1,100	250	1,200	---	---
Unfavorable years		800	500	800	150	900	---	---

816--Quarz-Linrose-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Quarz	Linrose	Cleavage	1	2	3
Bluebunch wheatgrass	AGSP	30-50	2-10	2-5	15-30	15-30	15-30
Basin wildrye	ELCI2	5-10	---	---	2-10	---	2-10
Idaho fescue	FEID	2-5	30-60	10-30	15-40	30-50	15-40
Nevada bluegrass	PONE3	2-5	---	---	2-5	---	2-5
Thurber needlegrass	STTH2	2-10	---	---	T-10	---	T-10
Cusick bluegrass	POCU3	---	5-10	---	---	---	---
Bluegrass	POA++	---	---	5-15	---	2-10	---
Webber ricegrass	ORWE	---	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	2-5	---
Other perennial grasses	PPGG	5-10	---	2-8	5-10	5-15	5-10
Arrowleaf balsamroot	BASA3	2-5	---	---	5-10	---	5-10
Tapertip hawksbeard	CRAC2	2-5	2-5	2-5	1-5	---	1-5
Goldenweed	HAPLO2	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---
balsamroot	BALSA	---	---	---	---	2-5	---
Other perennial forbs	PPFF	2-5	---	5-10	5-15	5-20	5-15
Antelope bitterbrush	PUTR2	2-15	---	---	5-15	0-10	5-15
Mountain big sagebrush	ARTRV	5-10	---	---	10-15	---	10-15
Black sagebrush	ARARN	---	10-20	15-25	---	---	---
Low sagebrush	ARAR8	---	---	15-25	---	10-25	---
Winterfat	EULA5	---	---	1-5	---	---	---
Other shrubs	SSSS	2-10	---	---	5-15	5-15	5-15
Range site number		O25XO09N	O24XO42N	O25XO24N	O25XO12N	O25XO17N	O25XO12N
Potential production (lb/acre):							
Favorable years		1,300	1,000	350	1,200	1,000	1,200
Normal years		900	800	250	900	700	900
Unfavorable years		700	500	150	600	400	600

830--Reese silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Reese	1	2	3
Basin wildrye	ELCI2	5-15	5-15	T-5	40-60
Inland saltgrass	DIST	5-10	5-10	T-15	5-10
Alkali sacaton	SPAI	---	---	40-70	15-30
Perennial forbs	PPFF	T-5	T-5	2-8	---
Black greasewood	SAVE4	60-75	60-75	2-5	5-15
Iodinebush	ALOC2	---	---	10-20	---
Saltbush	ATRIP	---	---	5-10	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2
Rubber rabbitbrush	CHNA2	---	---	---	1-2
Range site number		024X011N	024X011N	024X010N	024X007N
Potential production (lb/acre):					
Favorable years		500	500	450	1,900
Normal years		350	350	300	1,400
Unfavorable years		200	200	150	800

835--Reese-Ocala association

[bsence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Reese	Ocala	1	2	3
asin wildrye	ELCI2	5-15	5-15	5-15	40-60	---
nland saltgrass	DIST	5-10	5-10	5-10	5-10	---
lkali sacaton	SPAI	---	---	---	15-30	---
ottlebrush squirreltail	SIHY	---	---	---	---	5-10
ther perennial grasses	PPGG	---	---	---	---	T-10
erennial forbs	PPFF	T-5	T-5	T-5	---	2-8
lack greasewood	SAVE4	60-75	60-75	60-75	5-15	15-30
lkali rabbitbrush	CHAL9	---	---	---	1-2	---
ubber rabbitbrush	CHNA2	---	---	---	1-2	---
hadscale	ATCO	---	---	---	---	30-50
ud sagebrush	ARSP5	---	---	---	---	5-15
eepweed	SUAED	---	---	---	---	2-15
ange site number		O24XO11N	O24XO11N	O24XO11N	O24XO07N	O24XO03N
otential production (lb/acre):						
Favorable years		500	500	500	1,900	600
Normal years		350	350	350	1,400	450
Unfavorable years		200	200	200	800	300

841--Wendane Variant silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions	
		Soil name	Inclusion number--
		Wendane Variant	1
Alkali sacaton	SPAI	15-40	---
Alkali muhly	MUAS	10-20	---
Alkali bluegrass	POJU	5-15	---
Inland saltgrass	DIST	5-10	---
Alkali cordgrass	SPGR	5-10	---
Basin wildrye	ELCI2	2-5	---
Bottlebrush squirreltail	SIHY	---	5-15
Indian ricegrass	ORHY	---	5-15
Sandberg bluegrass	POSE	---	2-5
Needleandthread	STCO4	---	1-3
Arrowgrass	TRIGL	1-3	---
Perennial forbs	PPFF	---	2-8
Silver buffaloberry	SHAR	T-2	---
Willow	SALIX	T-2	---
Rubber rabbitbrush	CHNA2	T-2	---
Black greasewood	SAVE4	T-2	---
Woods rose	ROWO	T-2	---
Shadscale	ATCO	---	30-40
Bud sagebrush	ARSP5	---	20-30
Spiny hopsage	GRSP	---	2-5
Winterfat	EULA5	---	2-5
Range site number		024X009N	024X002N
Potential production (lb/acre):			
Favorable years		1,500	700
Normal years		1,000	450
Unfavorable years		700	300

850--Relley silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Relley	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	5-10	2-10
Indian ricegrass	ORHY	5-15	5-15	---	---	10-20
Sandberg bluegrass	POSE	2-5	2-5	---	---	---
Needleandthread	STCO4	1-3	1-3	---	---	---
Other perennial grasses	PPGG	---	---	T-10	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-50	30-50	---
Bud sagebrush	ARSP5	20-30	20-30	5-15	5-15	2-5
Spiny hopsage	GRSP	2-5	2-5	---	---	---
Winterfat	EULA5	2-5	2-5	---	---	60-70
Black greasewood	SAVE4	---	---	15-30	15-30	---
Seepweed	SUAED	---	---	2-15	2-15	---
Range site number		024X002N	024X002N	024X003N	024X003N	024X004N
Potential production (lb/acre):						
Favorable years		700	700	600	600	500
Normal years		450	450	450	450	350
Unfavorable years		300	300	300	300	200

851--Relley silt loam, cemented substratum

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Relley	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5
Needleandthread	STC04	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5
Range site number		024X002N	024X002N	024X002N
Potential production (lb/acre):				
Favorable years		700	700	700
Normal years		450	450	450
Unfavorable years		300	300	300

852--Relley silt loam, strongly saline

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Relley	1	2
Bottlebrush squirreltail	SIHY	5-10	5-15	2-10
Indian ricegrass	ORHY	---	5-15	10-20
Sandberg bluegrass	POSE	---	2-5	---
Needleandthread	STCO4	---	1-3	---
Other perennial grasses	PPGG	T-10	---	---
Perennial forbs	PPFF	2-8	2-8	2-8
Shadscale	ATCO	30-50	30-40	---
Black greasewood	SAVE4	15-30	---	---
Bud sagebrush	ARSP5	5-15	20-30	2-5
Seepweed	SUAED	2-15	---	---
Spiny hopsage	GRSP	---	2-5	---
Winterfat	EULA5	---	2-5	60-70
Range site number		024X003N	024X002N	024X004N
Potential production (lb/acre):				
Favorable years		600	700	500
Normal years		450	450	350
Unfavorable years		300	300	200

853--Relley silty clay loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions	
		Soil name	Inclusion number--
		Relley	1
Bottlebrush squirreltail	SIHY	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5
Needleandthread	STCO4	1-3	1-3
Perennial forbs	PPFF	2-8	2-8
Shadscale	ATCO	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5
Winterfat	EULA5	2-5	2-5
Range site number		024X002N	024X002N
Potential production (lb/acre):			
Favorable years		700	700
Normal years		450	450
Unfavorable years		300	300

855--Relley-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Relley	Broyles	1	2	3
Bottlebrush squirreltail	SIHY	5-15	2-10	5-10	5-15	2-5
Indian ricegrass	ORHY	5-15	5-15	---	5-15	2-10
Sandberg bluegrass	POSE	2-5	2-5	---	2-5	2-5
Needleandthread	STCO4	1-3	---	---	1-3	---
Basin wildrye	ELCI2	---	---	---	---	10-20
Other perennial grasses	PPGG	---	---	T-10	---	---
Globemallow	SPHAE	---	1-4	---	---	---
Phlox	PHLOX	---	1-4	---	---	---
Other perennial forbs	PPFF	2-8	---	2-8	2-8	---
Shadscale	ATCO	30-40	2-5	30-50	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	5-15	20-30	---
Spiny hopsage	GRSP	2-5	---	---	2-5	15-30
Winterfat	EULA5	2-5	20-40	---	2-5	---
Black greasewood	SAVE4	---	---	15-30	---	2-10
Seepweed	SUAED	---	---	2-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-25
Anderson peachbrush	PRAN2	---	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Range site number		024X002N	024X014N	024X003N	024X002N	024X041N
Potential production (lb/acre):						
Favorable years		700	400	600	700	1,000
Normal years		450	300	450	450	800
Unfavorable years		300	200	300	300	600

861--Rixie silty clay loam, strongly saline

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Rixie	1	2	3
Alkali sacaton	SPAI	15-40	40-70	15-40	15-30
Alkali muhly	MUAS	10-20	---	10-20	---
Alkali bluegrass	POJU	5-15	---	5-15	---
Inland saltgrass	DIST	5-10	T-15	5-10	5-10
Alkali cordgrass	SPGR	5-10	---	5-10	---
Basin wildrye	ELCI2	2-5	T-5	2-5	40-60
Arrowgrass	TRIGL	1-3	---	1-3	---
Perennial forbs	PPFF	---	2-8	---	---
Silver buffaloberry	SHAR	T-2	---	T-2	---
Willow	SALIX	T-2	---	T-2	---
Rubber rabbitbrush	CHNA2	T-2	---	T-2	1-2
Black greasewood	SAVE4	T-2	2-5	T-2	5-15
Woods rose	ROWO	T-2	---	T-2	---
Iodinebush	ALOC2	---	10-20	---	---
Saltbush	ATRIP	---	5-10	---	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2
Range site number		024X009N	024X010N	024X009N	024X007N
Potential production (lb/acre):					
Favorable years		1,500	450	1,500	1,900
Normal years		1,000	300	1,000	1,400
Unfavorable years		700	150	700	800

862--Rixie silty clay loam, drained, strongly saline

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Rixie	1	2	3	4
Basin wildrye	ELCI2	40-60	5-15	---	40-60	---
Alkali sacaton	SPAI	15-30	---	---	15-30	---
Inland saltgrass	DIST	5-10	5-10	5-10	5-10	5-10
Wildrye	ELMYU	---	---	30-60	---	30-60
Nevada bluegrass	PONE3	---	---	5-10	---	5-10
Mat muhly	MURI	---	---	2-10	---	2-10
Other perennial grasses	PPGG	---	---	5-15	---	5-15
Sierra clover	TRWO	---	---	2-5	---	2-5
Other perennial forbs	PPFF	---	T-5	5-10	---	5-10
Black greasewood	SAVE4	5-15	60-75	---	5-15	---
Alkali rabbitbrush	CHAL9	1-2	---	---	1-2	---
Rubber rabbitbrush	CHNA2	1-2	---	---	1-2	---
Willow	SALIX	---	---	5-10	---	5-10
Basin big sagebrush	ARTRT*	---	---	2-5	---	2-5
Silver sagebrush	ARCA13	---	---	2-5	---	2-5
Other shrubs	SSSS	---	---	2-8	---	2-8
Range site number		024X007N	024X011N	025X001N	024X007N	025X001N
Potential production (lb/acre):						
Favorable years		1,900	500	3,000	1,900	3,000
Normal years		1,400	350	2,500	1,400	2,500
Unfavorable years		800	200	1,800	800	1,800

863--Rixie-Rixie, sodic, complex

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name		Inclusion number--
		Rixie	Rixie, sodic	1
Alkali sacaton	SPAI	15-40	40-70	40-70
Alkali muhly	MUAS	10-20	---	---
Alkali bluegrass	POJU	5-15	---	---
Inland saltgrass	DIST	5-10	T-15	T-15
Alkali cordgrass	SPGR	5-10	---	---
Basin wildrye	ELCI2	2-5	T-5	T-5
Arrowgrass	TRIGL	1-3	---	---
Perennial forbs	PPFF	---	2-8	2-8
Silver buffaloberry	SHAR	T-2	---	---
Willow	SALIX	T-2	---	---
Rubber rabbitbrush	CHNA2	T-2	---	---
Black greasewood	SAVE4	T-2	2-5	2-5
Woods rose	ROWO	T-2	---	---
Iodinebush	ALOC2	---	10-20	10-20
Saltbush	ATRIP	---	5-10	5-10
Range site number		024X009N	024X010N	024X010N
Potential production (lb/acre):				
Favorable years		1,500	450	450
Normal years		1,000	300	300
Unfavorable years		700	150	150

864--Rixie silty clay loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Rixie	1	2	3
Wildrye	ELMYU	30-60	30-60	30-60	---
Nevada bluegrass	PONE3	5-10	5-10	5-10	---
Inland saltgrass	DIST	5-10	5-10	5-10	5-10
Mat muhly	MURI	2-10	2-10	2-10	---
Basin wildrye	ELCI2	---	---	---	40-60
Alkali sacaton	SPAI	---	---	---	15-30
Other perennial grasses	PPGG	5-15	5-15	5-15	---
Sierra clover	TRWO	2-5	2-5	2-5	---
Other perennial forbs	PPFF	5-10	5-10	5-10	---
Willow	SALIX	5-10	5-10	5-10	---
Basin big sagebrush	ARTRT*	2-5	2-5	2-5	---
Silver sagebrush	ARCA13	2-5	2-5	2-5	---
Black greasewood	SAVE4	---	---	---	5-15
Alkali rabbitbrush	CHAL9	---	---	---	1-2
Rubber rabbitbrush	CHNA2	---	---	---	1-2
Other shrubs	SSSS	2-8	2-8	2-8	---
Range site number		O25XO01N	O25XO01N	O25XO01N	O24XO07N
Potential production (lb/acre):					
Favorable years		3,000	3,000	3,000	1,900
Normal years		2,500	2,500	2,500	1,400
Unfavorable years		1,800	1,800	1,800	800

870--Roca-Bregar-Linrose association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Roca	Bregar	Linrose	1	2	3	4
Bluebunch wheatgrass	AGSP	40-60	---	2-10	---	5-10	---	2-5
Thurber needlegrass	STTH2	5-10	---	---	---	---	---	2-5
Bluegrass	POA++	2-10	---	---	---	---	---	---
Basin wildrye	ELCI2	2-5	---	---	---	---	---	10-20
Idaho fescue	FEID	---	10-20	30-60	---	30-60	---	---
Webber ricegrass	ORWE	---	5-10	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	---	---	---	2-5
Cusick bluegrass	POCU3	---	2-5	5-10	---	5-10	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	---	---	---
Pine bluegrass	POSC	---	2-5	---	---	---	---	---
Mountain brome	BRMA4	---	---	---	---	2-5	---	---
Sedge	CAREX	---	---	---	---	2-5	---	---
Indian ricegrass	ORHY	---	---	---	---	---	---	5-10
Tapertip hawksbeard	CRAC2	2-5	---	2-5	---	1-3	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	---	---	---	---
Goldenweed	HAPLO2	---	2-5	---	---	---	---	---
Phlox	PHLOX	---	2-5	---	---	---	---	---
Lupine	LUPIN	---	---	---	---	1-2	---	---
Other perennial forbs	PPFF	---	---	---	---	---	---	2-5
Wyoming big sagebrush	ARTRW*	5-10	---	---	---	---	---	---
Mountain big sagebrush	ARTRV	T-5	---	---	---	5-15	---	---
Low sagebrush	ARAR8	---	5-15	---	---	---	---	---
Black sagebrush	ARARN	---	5-15	10-20	---	---	---	---
Snowberry	SYMPH	---	---	---	---	2-5	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	---	10-20
Woods rose	ROWO	---	---	---	---	---	---	2-5
Common chokecherry	PRVI	---	---	---	---	---	---	2-5
Green ephedra	EPVI	---	---	---	---	---	---	2-5
Range site number		024X028N	024X016N	024X042N	None	024X023N	None	028B006N
Potential production (lb/acre):								
Favorable years		1,000	350	1,000	---	1,500	---	1,000
Normal years		700	250	800	---	1,200	---	600
Unfavorable years		500	150	500	---	900	---	400

872--Roca-Linrose-Wiskan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Roca	Linrose	Wiskan	1	2	3
Bluebunch wheatgrass	AGSP	40-60	2-10	10-20	5-10	5-10	---
Thurber needlegrass	STTH2	5-10	---	5-15	---	20-50	---
Bluegrass	POA++	2-10	---	2-10	---	---	---
Basin wildrye	ELCI2	2-5	---	---	---	---	---
Idaho fescue	FEID	---	30-60	---	30-60	---	10-20
Cusick bluegrass	POCU3	---	5-10	---	5-10	---	2-5
Indian ricegrass	ORHY	---	---	2-10	---	---	---
Mountain brome	BRMA4	---	---	---	2-5	---	---
Sedge	CAREX	---	---	---	2-5	---	---
Webber ricegrass	ORWE	---	---	---	---	---	5-10
Bottlebrush squirreltail	SIHY	---	---	---	---	---	5-10
Sandberg bluegrass	POSE	---	---	---	---	---	2-5
Pine bluegrass	POSC	---	---	---	---	---	2-5
Tapertip hawksbeard	CRAC2	2-5	2-5	2-5	1-3	2-4	---
Arrowleaf balsamroot	BASA3	2-5	---	---	---	---	---
Lupine	LUPIN	---	---	---	1-2	---	---
balsamroot	BALSA	---	---	---	---	2-4	---
Goldenweed	HAPLO2	---	---	---	---	---	2-5
Phlox	PHLOX	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	5-15	---	---	---
Wyoming big sagebrush	ARTRW*	5-10	---	---	---	15-20	---
Mountain big sagebrush	ARTRV	T-5	---	---	5-15	---	---
Black sagebrush	ARARN	---	10-20	15-30	---	---	5-15
Snowberry	SYMPH	---	---	---	2-5	---	---
Downy rabbitbrush	CHVIP	---	---	---	---	2-5	---
Spiny hopsage	GRSP	---	---	---	---	2-5	---
Low sagebrush	ARAR8	---	---	---	---	---	5-15
Other shrubs	SSSS	---	---	---	---	2-10	---
Range site number		O24XO28N	O24XO42N	O24XO31N	O24XO23N	O24XOO5N	O24XO16N
Potential production (lb/acre):							
Favorable years		1,000	1,000	700	1,500	800	350
Normal years		700	800	500	1,200	600	250
Unfavorable years		500	500	300	900	400	150

873--Roca-Reluctan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Roca	Reluctan	1	2	3	4
Bluebunch wheatgrass	AGSP	40-60	20-30	20-30	---	---	---
Thurber needlegrass	STTH2	5-10	2-10	15-25	---	---	---
Bluegrass	POA++	2-10	---	---	---	---	---
Basin wildrye	ELCI2	2-5	2-15	---	---	30-50	---
Idaho fescue	FEID	---	20-40	---	---	---	---
Nevada bluegrass	PONE3	---	---	2-10	---	5-10	---
Western wheatgrass	AGSM	---	---	---	---	5-10	---
Other perennial grasses	PPGG	---	---	10-15	---	5-15	---
Tapertip hawksbeard	CRAC2	2-5	1-5	2-5	---	---	---
Arrowleaf balsamroot	BASA3	2-5	1-5	2-5	---	---	---
Other perennial forbs	PPFF	---	---	2-5	---	5-10	---
Wyoming big sagebrush	ARTRW*	5-10	---	---	---	---	---
Mountain big sagebrush	ARTRV	T-5	5-15	---	---	---	---
Big sagebrush	ARTR2	---	---	10-15	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---
Other shrubs	SSSS	---	---	5-10	---	5-10	---
Range site number		024X028N	024X021N	025X014N	None	028B024N	None
Potential production (lb/acre):							
Favorable years		1,000	1,400	1,000	---	2,800	---
Normal years		700	1,000	800	---	1,700	---
Unfavorable years		500	700	600	---	1,000	---

875--Roca-Glean-Bregar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Roca	Glean	Bregar	1	2	3
Bluebunch wheatgrass	AGSP	40-60	5-10	---	20-50	---	---
Thurber needlegrass	STTH2	5-10	---	---	2-5	---	---
Bluegrass	POA++	2-10	---	---	---	---	---
Basin wildrye	ELCI2	2-5	---	---	5-10	---	---
Idaho fescue	FEID	---	30-60	10-20	1-10	---	---
Cusick bluegrass	POCU3	---	5-10	2-5	---	---	---
Mountain brome	BRMA4	---	2-5	---	2-15	---	---
Sedge	CAREX	---	2-5	---	---	---	---
Webber ricegrass	ORWE	---	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	2-5	5-15	---
Sandberg bluegrass	POSE	---	---	2-5	---	2-5	---
Pine bluegrass	POSC	---	---	2-5	---	---	---
Indian ricegrass	ORHY	---	---	---	---	5-15	---
Needleandthread	STCO4	---	---	---	---	1-3	---
Tapertip hawksbeard	CRAC2	2-5	1-3	---	2-5	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	2-5	---	---
Lupine	LUPIN	---	1-2	---	---	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---
Other perennial forbs	PPFF	---	---	---	---	2-8	---
Wyoming big sagebrush	ARTRW*	5-10	---	---	---	---	---
Mountain big sagebrush	ARTRV	T-5	5-15	---	5-15	---	---
Snowberry	SYMPH	---	2-5	---	---	---	---
Low sagebrush	ARAR8	---	---	5-15	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	---
Shadscale	ATCO	---	---	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	---	---	20-30	---
Spiny hopsage	GRSP	---	---	---	---	2-5	---
Winterfat	EULA5	---	---	---	---	2-5	---
Range site number		024X028N	024X023N	024X016N	024X029N	024X002N	None
Potential production (lb/acre):							
Favorable years		1,000	1,500	350	1,500	700	---
Normal years		700	1,200	250	1,100	450	---
Unfavorable years		500	900	150	800	300	---

881--Rose Creek silt loam, drained, strongly saline

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Rose Creek	1	2	3
Basin wildrye	ELCI2	40-60	40-60	40-60	40-60
Alkali sacaton	SPAI	15-30	15-30	15-30	15-30
Inland saltgrass	DIST	5-10	5-10	5-10	5-10
Black greasewood	SAVE4	5-15	5-15	5-15	5-15
Alkali rabbitbrush	CHAL9	1-2	1-2	1-2	1-2
Rubber rabbitbrush	CHNA2	1-2	1-2	1-2	1-2
Range site number		O24XO07N	O24XO07N	O24XO07N	O24XO07N
Potential production (lb/acre):					
Favorable years		1,900	1,900	1,900	1,900
Normal years		1,400	1,400	1,400	1,400
Unfavorable years		800	800	800	800

882--Rose Creek silty clay loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Rose Creek	1	2	3
Wildrye	ELMYU	30-60	30-60	30-60	30-60
Nevada bluegrass	PONE3	5-10	5-10	5-10	5-10
Inland saltgrass	DIST	5-10	5-10	5-10	5-10
Mat muhly	MURI	2-10	2-10	2-10	2-10
Other perennial grasses	PPGG	5-15	5-15	5-15	5-15
Sierra clover	TRWO	2-5	2-5	2-5	2-5
Other perennial forbs	PPFF	5-10	5-10	5-10	5-10
Willow	SALIX	5-10	5-10	5-10	5-10
Basin big sagebrush	ARTRT*	2-5	2-5	2-5	2-5
Silver sagebrush	ARCA13	2-5	2-5	2-5	2-5
Other shrubs	SSSS	2-8	2-8	2-8	2-8
Range site number		025X001N	025X001N	025X001N	025X001N
Potential production (lb/acre):					
Favorable years		3,000	3,000	3,000	3,000
Normal years		2,500	2,500	2,500	2,500
Unfavorable years		1,800	1,800	1,800	1,800

883--Rose Creek-Paranat silty clay loams

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Rose Creek	Paranat	1	2
Wildrye	ELMYU	30-60	30-60	30-60	30-60
Nevada bluegrass	PONE3	5-10	5-10	5-10	5-10
Inland saltgrass	DIST	5-10	5-10	5-10	5-10
Mat muhly	MURI	2-10	2-10	2-10	2-10
Other perennial grasses	PPGG	5-15	5-15	5-15	5-15
Sierra clover	TRWO	2-5	2-5	2-5	2-5
Other perennial forbs	PPFF	5-10	5-10	5-10	5-10
Willow	SALIX	5-10	5-10	5-10	5-10
Basin big sagebrush	ARTRT*	2-5	2-5	2-5	2-5
Silver sagebrush	ARCA13	2-5	2-5	2-5	2-5
Other shrubs	SSSS	2-8	2-8	2-8	2-8
Range site number		025X001N	025X001N	025X001N	025X001N
Potential production (lb/acre):					
Favorable years		3,000	3,000	3,000	3,000
Normal years		2,500	2,500	2,500	2,500
Unfavorable years		1,800	1,800	1,800	1,800

891--Rosney loam, cemented substratum

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Rosney	1	2	3
Bottlebrush squirreltail	SIHY	5-10	---	5-10	5-10
Basin wildrye	ELCI2	---	5-15	---	---
Inland saltgrass	DIST	---	5-10	---	---
Other perennial grasses	PPGG	T-10	---	T-10	T-10
Perennial forbs	PPFF	2-8	T-5	2-8	2-8
Shadscale	ATCO	30-50	---	30-50	30-50
Black greasewood	SAVE4	15-30	60-75	15-30	15-30
Bud sagebrush	ARSP5	5-15	---	5-15	5-15
Seepweed	SUAED	2-15	---	2-15	2-15
Range site number		024X003N	024X011N	024X003N	024X003N
Potential production (lb/acre):					
Favorable years		600	500	600	600
Normal years		450	350	450	450
Unfavorable years		300	200	300	300

892--Rosney silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Rosney	1	2	3
Indian ricegrass	ORHY	10-30	---	10-30	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	5-10
Alkali sacaton	SPAI	T-5	---	T-5	---
Other perennial grasses	PPGG	---	T-10	---	T-10
Perennial forbs	PPFF	T-5	2-8	T-5	2-8
Saltbush	ATRIP	50-65	---	50-65	---
Shadscale	ATCO	---	30-50	---	30-50
Black greasewood	SAVE4	---	15-30	---	15-30
Bud sagebrush	ARSP5	---	5-15	---	5-15
Seepweed	SUAED	---	2-15	---	2-15
Range site number		O24XO12N	O24XO03N	O24XO12N	O24XO03N
Potential production (lb/acre):					
Favorable years		700	600	700	600
Normal years		400	450	400	450
Unfavorable years		200	300	200	300

970--Soolake very fine sandy loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Soolake	1	2	3
Bottlebrush squirreltail	SIHY	5-10	5-15	5-10	5-10
Indian ricegrass	ORHY	---	5-15	---	---
Sandberg bluegrass	POSE	---	2-5	---	---
Needleandthread	STCO4	---	1-3	---	---
Other perennial grasses	PPGG	T-10	---	T-10	T-10
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-50	30-40	30-50	30-50
Black greasewood	SAVE4	15-30	---	15-30	15-30
Bud sagebrush	ARSP5	5-15	20-30	5-15	5-15
Seepweed	SUAED	2-15	---	2-15	2-15
Spiny hopsage	GRSP	---	2-5	---	---
Winterfat	EULA5	---	2-5	---	---
Range site number		O24XO03N	O24XO02N	O24XO03N	O24XO03N
Potential production (lb/acre):					
Favorable years		600	700	600	600
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

971--Soolake very fine sandy loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions	
		Soil name	Inclusion number--
		Soolake	1
Bottlebrush squirreltail	SIHY	5-10	5-15
Indian ricegrass	ORHY	---	5-15
Sandberg bluegrass	POSE	---	2-5
Needleandthread	STCO4	---	1-3
Other perennial grasses	PPGG	T-10	---
Perennial forbs	PPFF	2-8	2-8
Shadscale	ATCO	30-50	30-40
Black greasewood	SAVE4	15-30	---
Bud sagebrush	ARSP5	5-15	20-30
Seepweed	SUAED	2-15	---
Spiny hopsage	GRSP	---	2-5
Winterfat	EULA5	---	2-5
Range site number		024X003N	024X002N
Potential production (lb/acre):			
Favorable years		600	700
Normal years		450	450
Unfavorable years		300	300

972--Soolake-Dunphy-Argenta association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Soolake	Dunphy	Argenta	1	2
Bottlebrush squirreltail	SIHY	5-10	---	---	---	---
Basin wildrye	ELCI2	---	5-15	5-15	40-60	2-10
Inland saltgrass	DIST	---	5-10	5-10	5-10	---
Alkali sacaton	SPAI	---	---	---	15-30	---
Indian ricegrass	ORHY	---	---	---	---	20-40
Needleandthread	STCO4	---	---	---	---	5-15
Thickspike wheatgrass	AGDA	---	---	---	---	2-10
Other perennial grasses	PPGG	T-10	---	---	---	---
Lemon scurfpea	PSLA	---	---	---	---	2-5
Tufted eveningprimrose	OECA	---	---	---	---	2-4
Other perennial forbs	PPFF	2-8	T-5	T-5	---	---
Shadscale	ATCO	30-50	---	---	---	---
Black greasewood	SAVE4	15-30	60-75	60-75	5-15	2-8
Bud sagebrush	ARSP5	5-15	---	---	---	---
Seepweed	SUAED	2-15	---	---	---	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2	---
Rubber rabbitbrush	CHNA2	---	---	---	1-2	1-5
Basin big sagebrush	ARTRT*	---	---	---	---	10-20
Spiny hopsage	GRSP	---	---	---	---	5-10
Fourwing saltbush	ATCA2	---	---	---	---	2-10
Hairy horsebrush	TECO2	---	---	---	---	5-8
Range site number		O24XO03N	O24XO11N	O24XO11N	O24XO07N	O24XO01N
Potential production (lb/acre):						
Favorable years		600	500	500	1,900	800
Normal years		450	350	350	1,400	500
Unfavorable years		300	200	200	800	300

980--Sombrero very fine sandy loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Sombrero	1	2	3
Basin wildrye	ELCI2	40-60	T-5	5-15	40-60
Alkali sacaton	SPAI	15-30	40-70	---	15-30
Inland saltgrass	DIST	5-10	T-15	5-10	5-10
Perennial forbs	PPFF	---	2-8	T-5	---
Black greasewood	SAVE4	5-15	2-5	60-75	5-15
Alkali rabbitbrush	CHAL9	1-2	---	---	1-2
Rubber rabbitbrush	CHNA2	1-2	---	---	1-2
Iodinebush	ALOC2	---	10-20	---	---
Saltbush	ATRIP	---	5-10	---	---
Range site number		024X007N	024X010N	024X011N	024X007N
Potential production (lb/acre):					
Favorable years		1,900	450	500	1,900
Normal years		1,400	300	350	1,400
Unfavorable years		800	150	200	800

990--Sonoma silt loam, drained

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Sonoma	1	2
Basin wildrye	ELCI2	50-60	50-60	50-60
Nevada bluegrass	PONE3	5-15	---	5-15
Mat muhly	MURI	2-10	---	2-10
Sedge	CAREX	1-5	---	1-5
Western wheatgrass	AGSM	---	5-15	---
Other perennial grasses	PPGG	15-20	---	15-20
Perennial forbs	PPFF	5-10	2-8	5-10
Basin big sagebrush	ARTRT*	10-15	15-20	10-15
Black greasewood	SAVE4	---	2-10	---
Rubber rabbitbrush	CHNA2	---	2-5	---
Other shrubs	SSSS	2-5	---	2-5
Range site number		025X003N	024X006N	025X003N
Potential production (lb/acre):				
Favorable years		2,500	1,500	2,500
Normal years		2,900	1,100	1,900
Unfavorable years		2,200	600	1,200

991--Sonoma silt loam, drained, slightly saline

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Sonoma	1	2	3
Basin wildrye	ELCI2	40-60	---	---	40-60
Alkali sacaton	SPAI	15-30	---	---	15-30
Inland saltgrass	DIST	5-10	5-10	---	5-10
Wildrye	ELMYU	---	30-60	---	---
Nevada bluegrass	PONE3	---	5-10	---	---
Mat muhly	MURI	---	2-10	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---
Other perennial grasses	PPGG	---	5-15	T-10	---
Sierra clover	TRWO	---	2-5	---	---
Other perennial forbs	PPFF	---	5-10	2-8	---
Black greasewood	SAVE4	5-15	---	15-30	5-15
Alkali rabbitbrush	CHAL9	1-2	---	---	1-2
Rubber rabbitbrush	CHNA2	1-2	---	---	1-2
Willow	SALIX	---	5-10	---	---
Basin big sagebrush	ARTRT*	---	2-5	---	---
Silver sagebrush	ARCA13	---	2-5	---	---
Shadscale	ATCO	---	---	30-50	---
Bud sagebrush	ARSP5	---	---	5-15	---
Seepweed	SUAED	---	---	2-15	---
Other shrubs	SSSS	---	2-8	---	---
Range site number		024X007N	025X001N	024X003N	024X007N
Potential production (lb/acre):					
Favorable years		1,900	3,000	600	1,900
Normal years		1,400	2,500	450	1,400
Unfavorable years		800	1,800	300	800

992--Sonoma silt loam, strongly saline, rarely flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Sonoma	1	2	3	4
Basin wildrye	ELCI2	40-60	---	---	---	40-60
Alkali sacaton	SPAI	15-30	---	---	---	15-30
Inland saltgrass	DIST	5-10	5-10	---	5-10	5-10
Wildrye	ELMYU	---	30-60	---	30-60	---
Nevada bluegrass	PONE3	---	5-10	---	5-10	---
Mat muhly	MURI	---	2-10	---	2-10	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---
Other perennial grasses	PPGG	---	5-15	T-10	5-15	---
Sierra clover	TRWO	---	2-5	---	2-5	---
Other perennial forbs	PPFF	---	5-10	2-8	5-10	---
Black greasewood	SAVE4	5-15	---	15-30	---	5-15
Alkali rabbitbrush	CHAL9	1-2	---	---	---	1-2
Rubber rabbitbrush	CHNA2	1-2	---	---	---	1-2
Willow	SALIX	---	5-10	---	5-10	---
Basin big sagebrush	ARTRT*	---	2-5	---	2-5	---
Silver sagebrush	ARCA13	---	2-5	---	2-5	---
Shadscale	ATCO	---	---	30-50	---	---
Bud sagebrush	ARSP5	---	---	5-15	---	---
Seepweed	SUAED	---	---	2-15	---	---
Other shrubs	SSSS	---	2-8	---	2-8	---
Range site number		024X007N	025X001N	024X003N	025X001N	024X007N
Potential production (lb/acre):						
Favorable years		1,900	3,000	600	3,000	1,900
Normal years		1,400	2,500	450	2,500	1,400
Unfavorable years		800	1,800	300	1,800	800

993--Sonoma silty clay loam, frequently flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Sonoma	1	2	3
Wildrye	ELMYU	30-60	30-60	30-60	30-60
Nevada bluegrass	PONE3	5-10	5-10	5-10	5-10
Inland saltgrass	DIST	5-10	5-10	5-10	5-10
Mat muhly	MURI	2-10	2-10	2-10	2-10
Other perennial grasses	PPGG	5-15	5-15	5-15	5-15
Sierra clover	TRWO	2-5	2-5	2-5	2-5
Other perennial forbs	PPFF	5-10	5-10	5-10	5-10
Willow	SALIX	5-10	5-10	5-10	5-10
Basin big sagebrush	ARTRT*	2-5	2-5	2-5	2-5
Silver sagebrush	ARCA13	2-5	2-5	2-5	2-5
Other shrubs	SSSS	2-8	2-8	2-8	2-8
Range site number		025X001N	025X001N	025X001N	025X001N
Potential production (lb/acre):					
Favorable years		3,000	3,000	3,000	3,000
Normal years		2,500	2,500	2,500	2,500
Unfavorable years		1,800	1,800	1,800	1,800

994--Sonoma silty clay loam, drained, strongly saline, occasionally flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Sonoma	1	2	3	4
Basin wildrye	ELCI2	40-60	T-5	---	2-5	40-60
Alkali sacaton	SPAI	15-30	40-70	---	15-40	15-30
Inland saltgrass	DIST	5-10	T-15	---	5-10	5-10
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---
Alkali muhly	MUAS	---	---	---	10-20	---
Alkali bluegrass	POJU	---	---	---	5-15	---
Alkali cordgrass	SPGR	---	---	---	5-10	---
Arrowgrass	TRIGL	---	---	---	1-3	---
Other perennial grasses	PPGG	---	---	T-10	---	---
Perennial forbs	PPFF	---	2-8	2-8	---	---
Black greasewood	SAVE4	5-15	2-5	15-30	T-2	5-15
Alkali rabbitbrush	CHAL9	1-2	---	---	---	1-2
Rubber rabbitbrush	CHNA2	1-2	---	---	T-2	1-2
Iodinebush	ALOC2	---	10-20	---	---	---
Saltbush	ATRIP	---	5-10	---	---	---
Shadscale	ATCO	---	---	30-50	---	---
Bud sagebrush	ARSP5	---	---	5-15	---	---
Seepweed	SUAED	---	---	2-15	---	---
Silver buffaloberry	SHAR	---	---	---	T-2	---
Willow	SALIX	---	---	---	T-2	---
Woods rose	ROWO	---	---	---	T-2	---
Range site number		024X007N	024X010N	024X003N	024X009N	024X007N
Potential production (lb/acre):						
Favorable years		1,900	450	600	1,500	1,900
Normal years		1,400	300	450	1,000	1,400
Unfavorable years		800	150	300	700	800

995--Sonoma silty clay loam, strongly saline, occasionally flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Sonoma	1	2	3
Alkali sacaton	SPAI	15-40	---	40-70	15-40
Alkali muhly	MUAS	10-20	---	---	10-20
Alkali bluegrass	POJU	5-15	---	---	5-15
Inland saltgrass	DIST	5-10	5-10	T-15	5-10
Alkali cordgrass	SPGR	5-10	---	---	5-10
Basin wildrye	ELCI2	2-5	---	T-5	2-5
Wildrye	ELMYU	---	30-60	---	---
Nevada bluegrass	PONE3	---	5-10	---	---
Mat muhly	MURI	---	2-10	---	---
Arrowgrass	TRIGL	1-3	---	---	1-3
Other perennial grasses	PPGG	---	5-15	---	---
Sierra clover	TRWO	---	2-5	---	---
Other perennial forbs	PPFF	---	5-10	2-8	---
Silver buffaloberry	SHAR	T-2	---	---	T-2
Willow	SALIX	T-2	5-10	---	T-2
Rubber rabbitbrush	CHNA2	T-2	---	---	T-2
Black greasewood	SAVE4	T-2	---	2-5	T-2
Woods rose	ROWO	T-2	---	---	T-2
Basin big sagebrush	ARTRT*	---	2-5	---	---
Silver sagebrush	ARCA13	---	2-5	---	---
Iodinebush	ALOC2	---	---	10-20	---
Saltbush	ATRIP	---	---	5-10	---
Other shrubs	SSSS	---	2-8	---	---
Range site number		024X009N	025X001N	024X010N	024X009N
Potential production (lb/acre):					
Favorable years		1,500	3,000	450	1,500
Normal years		1,000	2,500	300	1,000
Unfavorable years		700	1,800	150	700

996--Sonoma, strongly saline-Sonoma complex

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Sonoma	Sonoma, strongly saline	1	2
Basin wildrye	ELCI2	40-60	2-5	40-60	5-15
Alkali sacaton	SPAI	15-30	15-40	15-30	---
Inland saltgrass	DIST	5-10	5-10	5-10	5-10
Alkali muhly	MUAS	---	10-20	---	---
Alkali bluegrass	POJU	---	5-15	---	---
Alkali cordgrass	SPGR	---	5-10	---	---
Arrowgrass	TRIGL	---	1-3	---	---
Perennial forbs	PPFF	---	---	---	T-5
Black greasewood	SAVE4	5-15	T-2	5-15	60-75
Alkali rabbitbrush	CHAL9	1-2	---	1-2	---
Rubber rabbitbrush	CHNA2	1-2	T-2	1-2	---
Silver buffaloberry	SHAR	---	T-2	---	---
Willow	SALIX	---	T-2	---	---
Woods rose	ROWO	---	T-2	---	---
Range site number		O24XO07N	O24XO09N	O24XO07N	O24XO11N
Potential production (lb/acre):					
Favorable years		1,900	1,500	1,900	500
Normal years		1,400	1,000	1,400	350
Unfavorable years		800	700	800	200

997--Sonoma silty clay loam, strongly saline, frequently flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Sonoma	1	2
Basin wildrye	ELCI2	40-60	50-60	5-15
Alkali sacaton	SPAI	15-30	---	---
Inland saltgrass	DIST	5-10	---	5-10
Western wheatgrass	AGSM	---	5-15	---
Perennial forbs	PPFF	---	2-8	T-5
Black greasewood	SAVE4	5-15	2-10	60-75
Alkali rabbitbrush	CHAL9	1-2	---	---
Rubber rabbitbrush	CHNA2	1-2	2-5	---
Basin big sagebrush	ARTRT*	---	15-20	---
Range site number		024X007N	024X006N	024X011N
Potential production (lb/acre):				
Favorable years		1,900	1,500	500
Normal years		1,400	1,100	350
Unfavorable years		800	600	200

1021--Susie Creek-Millerlux association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Susie Creek	Millerlux	1	2	3
Bluebunch wheatgrass	AGSP	20-30	15-20	20-30	---	15-30
Thurber needlegrass	STTH2	15-25	15-20	15-25	---	2-10
Nevada bluegrass	PONE3	2-10	---	2-10	---	---
Webber ricegrass	ORWE	---	5-10	---	---	---
Sandberg bluegrass	POSE	---	5-8	---	---	---
Pine bluegrass	POSC	---	5-8	---	---	---
Cusick bluegrass	POCU3	---	5-8	---	---	---
Idaho fescue	FEID	---	---	---	---	25-50
Spike fescue	HEKI	---	---	---	---	2-10
Other perennial grasses	PPGG	10-15	---	10-15	---	---
Tapertip hawksbeard	CRAC2	2-5	---	2-5	---	---
Arrowleaf balsamroot	BASA3	2-5	---	2-5	---	---
Balsamroot	BALSA	---	2-5	---	---	2-5
Eriogonum	ERIOG	---	1-3	---	---	---
Phlox	PHLOX	---	1-3	---	---	---
Other perennial forbs	PPFF	2-5	---	2-5	---	---
Big sagebrush	ARTR2	10-15	---	10-15	---	---
Low sagebrush	ARAR8	---	20-30	---	---	10-20
Douglas rabbitbrush	CHVI8	---	---	---	---	2-5
Other shrubs	SSSS	5-10	---	5-10	---	---
Range site number		025X014N	024X018N	025X014N	None	024X027N
Potential production (lb/acre):						
Favorable years		1,000	700	1,000	---	1,200
Normal years		800	500	800	---	800
Unfavorable years		600	300	600	---	600

1031--Teman silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Teman	1	2	3	4
Basin wildrye	ELCI2	50-60	---	2-10	---	---
Western wheatgrass	AGSM	5-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	---	5-10	5-10
Indian ricegrass	ORHY	---	5-15	20-40	10-30	---
Sandberg bluegrass	POSE	---	2-5	---	---	---
Needleandthread	STCO4	---	1-3	5-15	---	---
Thickspike wheatgrass	AGDA	---	---	2-10	---	---
Alkali sacaton	SPAI	---	---	---	T-5	---
Other perennial grasses	PPGG	---	---	---	---	T-10
Lemon scurfpea	PSLA	---	---	2-5	---	---
Tufted eveningprimrose	OECA	---	---	2-4	---	---
Other perennial forbs	PPFF	2-8	2-8	---	T-5	2-8
Basin big sagebrush	ARTRT*	15-20	---	10-20	---	---
Black greasewood	SAVE4	2-10	---	2-8	---	15-30
Rubber rabbitbrush	CHNA2	2-5	---	1-5	---	---
Shadscale	ATCO	---	30-40	---	---	30-50
Bud sagebrush	ARSP5	---	20-30	---	---	5-15
Spiny hopsage	GRSP	---	2-5	5-10	---	---
Winterfat	EULA5	---	2-5	---	---	---
Fourwing saltbush	ATCA2	---	---	2-10	---	---
Hairy horsebrush	TECO2	---	---	5-8	---	---
Saltbush	ATRIP	---	---	---	50-65	---
Seepweed	SUAED	---	---	---	---	2-15
Range site number		024X006N	024X002N	024X001N	024X012N	024X003N
Potential production (lb/acre):						
Favorable years		1,500	700	800	700	600
Normal years		1,100	450	500	400	450
Unfavorable years		600	300	300	200	300

1032--Teman silt loam, clayey substratum

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Teman	1	2	3
Basin wildrye	ELCI2	50-60	2-10	---	T-5
Western wheatgrass	AGSM	5-15	---	---	---
Indian ricegrass	ORHY	---	20-40	10-30	---
Needleandthread	STCO4	---	5-15	---	---
Thickspike wheatgrass	AGDA	---	2-10	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---
Alkali sacaton	SPAI	---	---	T-5	40-70
Inland saltgrass	DIST	---	---	---	T-15
Lemon scurfpea	PSLA	---	2-5	---	---
Tufted eveningprimrose	OECA	---	2-4	---	---
Other perennial forbs	PPFF	2-8	---	T-5	2-8
Basin big sagebrush	ARTRT*	15-20	10-20	---	---
Black greasewood	SAVE4	2-10	2-8	---	2-5
Rubber rabbitbrush	CHNA2	2-5	1-5	---	---
Spiny hopsage	GRSP	---	5-10	---	---
Fourwing saltbush	ATCA2	---	2-10	---	---
Hairy horsebrush	TECO2	---	5-8	---	---
Saltbush	ATRIP	---	---	50-65	5-10
Iodinebush	ALOC2	---	---	---	10-20
Range site number		O24X006N	O24X001N	O24X012N	O24X010N
Potential production (lb/acre):					
Favorable years		1,500	800	700	450
Normal years		1,100	500	400	300
Unfavorable years		600	300	200	150

1033--Teman silt loam, strongly saline

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Teman	1	2	3
Basin wildrye	ELCI2	50-60	---	---	---
Western wheatgrass	AGSM	5-15	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	5-15	5-10
Indian ricegrass	ORHY	---	---	5-15	10-30
Sandberg bluegrass	POSE	---	---	2-5	---
Needleandthread	STCO4	---	---	1-3	---
Alkali sacaton	SPAI	---	---	---	T-5
Other perennial grasses	PPGG	---	T-10	---	---
Perennial forbs	PPFF	2-8	2-8	2-8	T-5
Basin big sagebrush	ARTRT*	15-20	---	---	---
Black greasewood	SAVE4	2-10	15-30	---	---
Rubber rabbitbrush	CHNA2	2-5	---	---	---
Shadscale	ATCO	---	30-50	30-40	---
Bud sagebrush	ARSP5	---	5-15	20-30	---
Seepweed	SUAED	---	2-15	---	---
Spiny hopsage	GRSP	---	---	2-5	---
Winterfat	EULA5	---	---	2-5	---
Saltbush	ATRIP	---	---	---	50-65
Range site number		O24XO06N	O24XO03N	O24XO02N	O24XO12N
Potential production (lb/acre):					
Favorable years		1,500	600	700	700
Normal years		1,100	450	450	400
Unfavorable years		600	300	300	200

1040--Tenabo, gravelly-Allor-Tenabo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Tenabo, gravelly	Allor	Tenabo	1	2
Bottlebrush squirreltail	SIHY	5-15	---	5-15	5-15	---
Indian ricegrass	ORHY	5-15	---	5-15	5-15	---
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	---
Needleandthread	STCO4	1-3	---	1-3	1-3	---
Thurber needlegrass	STTH2	---	20-50	---	---	20-50
Bluebunch wheatgrass	AGSP	---	5-10	---	---	5-10
Balsamroot	BALSA	---	2-4	---	---	2-4
Tapertip hawksbeard	CRAC2	---	2-4	---	---	2-4
Other perennial forbs	PPFF	2-8	---	2-8	2-8	---
Shadscale	ATCO	30-40	---	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	---	20-30	20-30	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	---	2-5	2-5	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	---	15-20
Downy rabbitbrush	CHVIP	---	2-5	---	---	2-5
Other shrubs	SSSS	---	2-10	---	---	2-10
Range site number		O24XO02N	O24XO05N	O24XO02N	O24XO02N	O24XO05N
Potential production (lb/acre):						
Favorable years		700	800	700	700	800
Normal years		450	600	450	450	600
Unfavorable years		300	400	300	300	400

1041--Tenabo-Ricert association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Tenabo	Ricert	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5	2-5
Range site number		024X002N	024X002N	024X002N	024X002N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

1042--Tenabo very gravelly loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Tenabo	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	---	5-15	2-10	---
Indian ricegrass	ORHY	5-15	---	5-15	5-15	---
Sandberg bluegrass	POSE	2-5	---	2-5	2-10	---
Needleandthread	STCO4	1-3	---	1-3	---	---
Bluebunch wheatgrass	AGSP	---	15-25	---	---	---
Thurber needlegrass	STTH2	---	15-25	---	10-20	---
Basin wildrye	ELCI2	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	1-5
Other perennial grasses	PPGG	---	10-20	---	---	15-20
Tapertip hawksbeard	CRAC2	---	2-5	---	1-2	---
Arrowleaf balsamroot	BASA3	---	2-5	---	---	---
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-10	2-8	---	5-10
Shadscale	ATCO	30-40	---	30-40	---	---
Bud sagebrush	ARSP5	20-30	---	20-30	---	---
Spiny hopsage	GRSP	2-5	---	2-5	5-15	---
Winterfat	EULA5	2-5	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	5-10	---	30-35	---
Mountain big sagebrush	ARTRV	---	5-10	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	10-15
Other shrubs	SSSS	---	2-10	---	---	2-5
Range site number		O24XOO2N	O24XO35N	O24XOO2N	O24XO2ON	O25XOO3N
Potential production (lb/acre):						
Favorable years		700	500	700	700	2,500
Normal years		450	400	450	450	1,900
Unfavorable years		300	250	300	300	1,200

1062--Tomera-Snapp-Whirlo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Tomera	Snapp	Whirlo	1	2
Thurber needlegrass	STTH2	20-50	20-50	---	10-20	20-50
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---	5-10
Bottlebrush squirreltail	SIHY	---	---	5-15	2-10	---
Indian ricegrass	ORHY	---	---	5-15	5-15	---
Sandberg bluegrass	POSE	---	---	2-5	2-10	---
Needleandthread	STCO4	---	---	1-3	---	---
Balsamroot	BALSA	2-4	2-4	---	---	2-4
Tapertip hawksbeard	CRAC2	2-4	2-4	---	1-2	2-4
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	---	---	2-8	---	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	30-35	15-20
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5
Shadscale	ATCO	---	---	30-40	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---
Winterfat	EULA5	---	---	2-5	---	---
Other shrubs	SSSS	2-10	2-10	---	---	2-10
Range site number		O24XO05N	O24XO05N	O24XO02N	O24XO20N	O24XO05N
Potential production (lb/acre):						
Favorable years		800	800	700	700	800
Normal years		600	600	450	450	600
Unfavorable years		400	400	300	300	400

1080--Trunk-Burrita association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Trunk	Burrita	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	---	---	10-20
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-15	---	2-10
Indian ricegrass	ORHY	---	---	5-15	---	5-15
Sandberg bluegrass	POSE	---	---	2-5	---	2-10
Needleandthread	STCO4	---	---	1-3	---	---
Balsamroot	BALSA	2-4	2-4	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	---	1-2
Globemallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	---	---	2-8	---	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	---	30-35
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---	5-15
Shadscale	ATCO	---	---	30-40	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---
Winterfat	EULA5	---	---	2-5	---	---
Other shrubs	SSSS	2-10	2-10	---	---	---
Range site number		024X005N	024X005N	024X002N	None	024X020N
Potential production (lb/acre):						
Favorable years		800	800	700	---	700
Normal years		600	600	450	---	450
Unfavorable years		400	400	300	---	300

1082--Trunk-Reina association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Trunk	Reina	1	2
Thurber needlegrass	STTH2	20-50	20-50	---	---
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---
Balsamroot	BALSA	2-4	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	---	---
Other shrubs	SSSS	2-10	2-10	---	---
Range site number		024X005N	024X005N	None	None
Potential production (lb/acre):					
Favorable years		800	800	---	---
Normal years		600	600	---	---
Unfavorable years		400	400	---	---

1084--Trunk-Burrita-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Trunk	Burrita	Rock outcrop	1	2	3	4
Thurber needlegrass	STTH2	20-50	20-50	---	15-20	20-50	20-50	2-5
Bluebunch wheatgrass	AGSP	5-10	5-10	---	15-20	5-10	5-10	---
Webber ricegrass	ORWE	---	---	---	5-10	---	---	2-10
Sandberg bluegrass	POSE	---	---	---	5-8	---	---	2-5
Pine bluegrass	POSC	---	---	---	5-8	---	---	2-5
Cusick bluegrass	POCU3	---	---	---	5-8	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	---	2-10
Indian ricegrass	ORHY	---	---	---	---	---	---	2-10
Desert needlegrass	STSP3	---	---	---	---	---	---	2-5
Balsamroot	BALSA	2-4	2-4	---	2-5	2-4	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	---	2-4	2-4	---
Eriogonum	ERIOG	---	---	---	1-3	---	---	1-2
Phlox	PHLOX	---	---	---	1-3	---	---	---
Hawksbeard	CREPI	---	---	---	---	---	---	1-2
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	---	15-20	15-20	10-25
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	2-5	2-5	2-5
Spiny hopsage	GRSP	2-5	2-5	---	---	2-5	2-5	5-15
Low sagebrush	ARAR8	---	---	---	20-30	---	---	---
Shadscale	ATCO	---	---	---	---	---	---	10-25
Bud sagebrush	ARSP5	---	---	---	---	---	---	2-5
Other shrubs	SSSS	2-10	2-10	---	---	2-10	2-10	---
Range site number		024X005N	024X005N	None	024X018N	024X005N	024X005N	024X026N
Potential production (lb/acre):								
Favorable years		800	800	---	700	800	800	400
Normal years		600	600	---	500	600	600	300
Unfavorable years		400	400	---	300	400	400	200

1085--Trunk-Dewar-Stingdorn association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Trunk	Dewar	Stingdorn	1	2	3	4
Thurber needlegrass	STTH2	20-50	20-50	---	20-50	20-50	20-50	---
Bluebunch wheatgrass	AGSP	5-10	5-10	---	5-10	5-10	5-10	---
Bottlebrush squirreltail	SIHY	---	---	5-15	---	---	---	---
Indian ricegrass	ORHY	---	---	5-15	---	---	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---	---
Needleandthread	STCO4	---	---	1-3	---	---	---	---
Balsamroot	BALSA	2-4	2-4	---	2-4	2-4	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	2-4	2-4	2-4	---
Other perennial forbs	PPFF	---	---	2-8	---	---	---	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	15-20	15-20	15-20	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	2-5	2-5	2-5	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	2-5	2-5	---
Shadscale	ATCO	---	---	30-40	---	---	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---	---	---
Winterfat	EULA5	---	---	2-5	---	---	---	---
Other shrubs	SSSS	2-10	2-10	---	2-10	2-10	2-10	---
Range site number		O24XO05N	O24XO05N	O24XO02N	O24XO05N	O24XO05N	O24XO05N	None
Potential production (lb/acre):								
Favorable years		800	800	700	800	800	800	---
Normal years		600	600	450	600	600	600	---
Unfavorable years		400	400	300	400	400	400	---

1086--Trunk-Malpais-Minat association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Trunk	Malpais	Minat	1	2	3
Thurber needlegrass	STTH2	20-50	2-5	20-50	---	---	20-50
Bluebunch wheatgrass	AGSP	5-10	---	5-10	---	---	5-10
Bottlebrush squirreltail	SIHY	---	2-10	---	5-15	5-10	---
Indian ricegrass	ORHY	---	2-10	---	5-15	10-30	---
Webber ricegrass	ORWE	---	2-10	---	---	---	---
Desert needlegrass	STSP3	---	2-5	---	---	---	---
Sandberg bluegrass	POSE	---	2-5	---	2-5	---	---
Pine bluegrass	POSC	---	2-5	---	---	---	---
Needleandthread	STCO4	---	---	---	1-3	---	---
Other perennial grasses	PPGG	---	---	---	---	10-20	---
Eriogonum	ERIOG	---	1-2	---	---	---	---
Balsamroot	BALSA	2-4	---	2-4	---	---	2-4
Tapertip hawksbeard	CRAC2	2-4	---	2-4	---	---	2-4
Hawksbeard	CREPI	---	1-2	---	---	---	---
Other perennial forbs	PPFF	---	---	---	2-8	5-15	---
Wyoming big sagebrush	ARTRW*	15-20	10-25	15-20	---	10-25	15-20
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---	1-5	2-5
Spiny hopsage	GRSP	2-5	5-15	2-5	2-5	1-5	2-5
Shadscale	ATCO	---	10-25	---	30-40	---	---
Bud sagebrush	ARSP5	---	2-5	---	20-30	---	---
Winterfat	EULA5	---	---	---	2-5	---	---
Antelope bitterbrush	PUTR2	---	---	---	---	1-5	---
Black sagebrush	ARARN	---	---	---	---	5-15	---
Purple sage	SACA9	---	---	---	---	T-5	---
Other shrubs	SSSS	2-10	---	2-10	---	2-4	2-10
Range site number		024X005N	024X026N	024X005N	024X002N	025X025N	024X005N
Potential production (lb/acre):							
Favorable years		800	400	800	700	200	800
Normal years		600	300	600	450	150	600
Unfavorable years		400	200	400	300	100	400

1087--Trunk-Burrita-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Trunk	Burrita	Colbar	1	2	3	4
Thurber needlegrass	STTH2	20-50	20-50	20-50	---	10-15	20-50	---
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	---	---	5-15	---	---	---
Indian ricegrass	ORHY	---	---	---	5-15	10-15	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---	---
Needleandthread	STCO4	---	---	---	1-3	---	---	---
Bluegrass	POA++	---	---	---	---	2-10	---	---
Other perennial grasses	PPGG	---	---	---	---	5-20	---	---
Balsamroot	BALSA	2-4	2-4	2-4	---	---	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	---	---	2-4	---
Globemallow	SPHAE	---	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	---	---	2-8	---	---	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	---	15-20	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---	---	2-5	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	---	2-5	---
Shadscale	ATCO	---	---	---	30-40	---	---	---
Bud sagebrush	ARSP5	---	---	---	20-30	---	---	---
Winterfat	EULA5	---	---	---	2-5	---	---	---
Black sagebrush	ARARN	---	---	---	---	25-35	---	---
Other shrubs	SSSS	2-10	2-10	2-10	---	5-35	2-10	---
Range site number		024X005N	024X005N	024X005N	024X002N	024X030N	024X005N	None
Potential production (lb/acre):								
Favorable years		800	800	800	700	500	800	---
Normal years		600	600	600	450	350	600	---
Unfavorable years		400	400	400	300	250	400	---

1091--Tulase silt loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Tulase	1	2
Bluebunch wheatgrass	AGSP	10-40	10-40	10-40
Thurber needlegrass	STTH2	10-40	10-40	10-40
Basin wildrye	ELCI2	5-15	5-15	5-15
Indian ricegrass	ORHY	2-10	2-10	2-10
Webber ricegrass	ORWE	2-10	2-10	2-10
Bluegrass	POA++	2-10	2-10	2-10
Other perennial grasses	PPGG	2-15	2-15	2-15
Globemallow	SPHAE	2-5	2-5	2-5
Other perennial forbs	PPFF	2-10	2-10	2-10
Big sagebrush	ARTR2	10-15	10-15	10-15
Other shrubs	SSSS	5-15	5-15	5-15
Range site number		025X019N	025X019N	025X019N
Potential production (lb/acre):				
Favorable years		800	800	800
Normal years		600	600	600
Unfavorable years		400	400	400

1092--Tulase-Bubus-McConnel association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Tulase	Bubus	McConnel	1	2	3
Thurber needlegrass	STTH2	20-50	---	20-50	---	20-50	20-50
Bluebunch wheatgrass	AGSP	5-10	---	5-10	---	5-10	5-10
Bottlebrush squirreltail	SIHY	---	5-15	---	5-10	---	---
Indian ricegrass	ORHY	---	5-15	---	---	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	---	---
Needleandthread	STCO4	---	1-3	---	---	---	---
Other perennial grasses	PPGG	---	---	---	T-10	---	---
Balsamroot	BALSA	2-4	---	2-4	---	2-4	2-4
Tapertip hawksbeard	CRAC2	2-4	---	2-4	---	2-4	2-4
Other perennial forbs	PPFF	---	2-8	---	2-8	---	---
Wyoming big sagebrush	ARTRW*	15-20	---	15-20	---	15-20	15-20
Downy rabbitbrush	CHVIP	2-5	---	2-5	---	2-5	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5	---	2-5	2-5
Shadscale	ATCO	---	30-40	---	30-50	---	---
Bud sagebrush	ARSP5	---	20-30	---	5-15	---	---
Winterfat	EULA5	---	2-5	---	---	---	---
Black greasewood	SAVE4	---	---	---	15-30	---	---
Seepweed	SUAED	---	---	---	2-15	---	---
Other shrubs	SSSS	2-10	---	2-10	---	2-10	2-10
Range site number		O24XO05N	O24XO02N	O24XO05N	O24XO03N	O24XO05N	O24XO05N
Potential production (lb/acre):							
Favorable years		800	700	800	600	800	800
Normal years		600	450	600	450	600	600
Unfavorable years		400	300	400	300	400	400

1102--Tweba very fine sandy loam, drained, 0 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Tweba	1	2
Basin wildrye	ELCI2	50-60	5-15	---
Western wheatgrass	AGSM	5-15	---	---
Inland saltgrass	DIST	---	5-10	---
Thurber needlegrass	STTH2	---	---	10-20
Indian ricegrass	ORHY	---	---	5-15
Bottlebrush squirreltail	SIHY	---	---	2-10
Sandberg bluegrass	POSE	---	---	2-10
Tapertip hawksbeard	CRAC2	---	---	1-2
Globemallow	SPHAE	---	---	1-2
Phlox	PHLOX	---	---	1-2
Other perennial forbs	PPFF	2-8	T-5	---
Basin big sagebrush	ARTRT*	15-20	---	---
Black greasewood	SAVE4	2-10	60-75	---
Rubber rabbitbrush	CHNA2	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	30-35
Spiny hopsage	GRSP	---	---	5-15
Range site number		024X006N	024X011N	024X020N
Potential production (lb/acre):				
Favorable years		1,500	500	700
Normal years		1,100	350	450
Unfavorable years		600	200	300

1110--Umberland silty clay loam, ponded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Umberland	1	2
Inland saltgrass	DIST	60-90	---	---
Basin wildrye	ELCI2	---	---	50-60
Western wheatgrass	AGSM	---	---	5-15
Other perennial grasses	PPGG	2-5	---	---
Perennial forbs	PPFF	---	---	2-8
Seepweed	SUAED	2-5	---	---
Black greasewood	SAVE4	2-5	---	2-10
Basin big sagebrush	ARTRT*	---	---	15-20
Rubber rabbitbrush	CHNA2	---	---	2-5
Other shrubs	SSSS	2-5	---	---
Range site number		026X002N	None	024X006N
Potential production (lb/acre):				
Favorable years		2,000	---	1,500
Normal years		1,700	---	1,100
Unfavorable years		1,200	---	600

1140--Wendane silt loam, frequently flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Wendane	1	2	3
Basin wildrye	ELCI2	40-60	---	5-15	50-60
Alkali sacaton	SPAI	15-30	---	---	---
Inland saltgrass	DIST	5-10	---	5-10	---
Bottlebrush squirreltail	SIHY	---	5-10	---	---
Western wheatgrass	AGSM	---	---	---	5-15
Other perennial grasses	PPGG	---	T-10	---	---
Perennial forbs	PPFF	---	2-8	T-5	2-8
Black greasewood	SAVE4	5-15	15-30	60-75	2-10
Alkali rabbitbrush	CHAL9	1-2	---	---	---
Rubber rabbitbrush	CHNA2	1-2	---	---	2-5
Shadscale	ATCO	---	30-50	---	---
Bud sagebrush	ARSP5	---	5-15	---	---
Seepweed	SUAED	---	2-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	15-20
Range site number		O24XO07N	O24XO03N	O24XO11N	O24XO06N
Potential production (lb/acre):					
Favorable years		1,900	600	500	1,500
Normal years		1,400	450	350	1,100
Unfavorable years		800	300	200	600

1141--Wendane silt loam, sandy substratum

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Wendane	1	2	3	4
Basin wildrye	ELCI2	40-60	5-15	---	---	5-15
Alkali sacaton	SPAI	15-30	---	---	---	---
Inland saltgrass	DIST	5-10	5-10	---	---	5-10
Bottlebrush squirreltail	SIHY	---	---	5-10	5-10	---
Other perennial grasses	PPGG	---	---	T-10	T-10	---
Perennial forbs	PPFF	---	T-5	2-8	2-8	T-5
Black greasewood	SAVE4	5-15	60-75	15-30	15-30	60-75
Alkali rabbitbrush	CHAL9	1-2	---	---	---	---
Rubber rabbitbrush	CHNA2	1-2	---	---	---	---
Shadscale	ATCO	---	---	30-50	30-50	---
Bud sagebrush	ARSP5	---	---	5-15	5-15	---
Seepweed	SUAED	---	---	2-15	2-15	---
Range site number		024X007N	024X011N	024X003N	024X003N	024X011N
Potential production (lb/acre):						
Favorable years		1,900	500	600	600	500
Normal years		1,400	350	450	450	350
Unfavorable years		800	200	300	300	200

1142--Wendane-Tweba association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name		Inclusion number--
		Wendane	Tweba	1
Basin wildrye	ELCI2	5-15	50-60	5-20
Inland saltgrass	DIST	5-10	---	---
Western wheatgrass	AGSM	---	5-15	---
Bottlebrush squirreltail	SIHY	---	---	2-5
Indian ricegrass	ORHY	---	---	2-5
Thelypody	THELY	---	---	2-4
Other perennial forbs	PPFF	T-5	2-8	---
Black greasewood	SAVE4	60-75	2-10	20-30
Basin big sagebrush	ARTRT*	---	15-20	5-15
Rubber rabbitbrush	CHNA2	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	5-10
Spiny hopsage	GRSP	---	---	5-15
Range site number		024X011N	024X006N	024X022N
Potential production (lb/acre):				
Favorable years		500	1,500	800
Normal years		350	1,100	600
Unfavorable years		200	600	350

1143--Wendane silt loam, occasionally flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Wendane	1	2	3
Basin wildrye	ELCI2	5-15	40-60	20-40	---
Inland saltgrass	DIST	5-10	5-10	---	---
Alkali sacaton	SPAI	---	15-30	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10
Other perennial grasses	PPGG	---	---	---	T-10
Perennial forbs	PPFF	T-5	---	2-8	2-8
Black greasewood	SAVE4	60-75	5-15	5-15	15-30
Alkali rabbitbrush	CHAL9	---	1-2	---	---
Rubber rabbitbrush	CHNA2	---	1-2	---	---
Torrey quailbush	ATTO	---	---	30-50	---
Basin big sagebrush	ARTRT*	---	---	2-10	---
Shadscale	ATCO	---	---	---	30-50
Bud sagebrush	ARSP5	---	---	---	5-15
Seepweed	SUAED	---	---	---	2-15
Range site number		024X011N	024X007N	024X015N	024X003N
Potential production (lb/acre):					
Favorable years		500	1,900	1,500	600
Normal years		350	1,400	1,200	450
Unfavorable years		200	800	800	300

1144--Wendane-Batan-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Wendane	Batan	Broyles	1	2
Basin wildrye	ELCI2	40-60	---	---	---	5-15
Alkali sacaton	SPAI	15-30	---	---	---	---
Inland saltgrass	DIST	5-10	---	---	---	5-10
Bottlebrush squirreltail	SIHY	---	5-10	5-10	5-15	---
Indian ricegrass	ORHY	---	---	---	5-15	---
Sandberg bluegrass	POSE	---	---	---	2-5	---
Needleandthread	STCO4	---	---	---	1-3	---
Other perennial grasses	PPGG	---	T-10	T-10	---	---
Perennial forbs	PPFF	---	2-8	2-8	2-8	T-5
Black greasewood	SAVE4	5-15	15-30	15-30	---	60-75
Alkali rabbitbrush	CHAL9	1-2	---	---	---	---
Rubber rabbitbrush	CHNA2	1-2	---	---	---	---
Shadscale	ATCO	---	30-50	30-50	30-40	---
Bud sagebrush	ARSP5	---	5-15	5-15	20-30	---
Seepweed	SUAED	---	2-15	2-15	---	---
Spiny hopsage	GRSP	---	---	---	2-5	---
Winterfat	EULA5	---	---	---	2-5	---
Range site number		024X007N	024X003N	024X003N	024X002N	024X011N
Potential production (lb/acre):						
Favorable years		1,900	600	600	700	500
Normal years		1,400	450	450	450	350
Unfavorable years		800	300	300	300	200

1145--Wendane-Playas association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Wendane	Playas	1	2	3
Basin wildrye	ELCI2	5-15	---	T-5	40-60	---
Inland saltgrass	DIST	5-10	---	T-15	5-10	---
Alkali sacaton	SPAI	---	---	40-70	15-30	---
Indian ricegrass	ORHY	---	---	---	---	10-20
Needleandthread	STCO4	---	---	---	---	5-10
Other perennial grasses	PPGG	---	---	---	---	2-5
Perennial forbs	PPFF	T-5	---	2-8	---	2-5
Black greasewood	SAVE4	60-75	---	2-5	5-15	10-40
Iodinebush	ALOC2	---	---	10-20	---	---
Saltbush	ATRIP	---	---	5-10	---	---
Alkali rabbitbrush	CHAL9	---	---	---	1-2	---
Rubber rabbitbrush	CHNA2	---	---	---	1-2	---
Range site number		024X011N	None	024X010N	024X007N	027X016N
Potential production (lb/acre):						
Favorable years		500	---	450	1,900	300
Normal years		350	---	300	1,400	200
Unfavorable years		200	---	150	800	50

1146--Wendane-Sonoma-Valmy association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Wendane	Sonoma	Valmy	1	2	3
Basin wildrye	ELCI2	40-60	50-60	5-20	---	20-40	---
Alkali sacaton	SPAI	15-30	---	---	---	---	---
Inland saltgrass	DIST	5-10	---	---	5-10	---	---
Western wheatgrass	AGSM	---	5-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	5-10
Indian ricegrass	ORHY	---	---	2-5	---	---	---
Wildrye	ELMYU	---	---	---	30-60	---	---
Nevada bluegrass	PONE3	---	---	---	5-10	---	---
Mat muhly	MURI	---	---	---	2-10	---	---
Other perennial grasses	PPGG	---	---	---	5-15	---	T-10
Thelypody	THELY	---	---	2-4	---	---	---
Sierra clover	TRWO	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	2-8	---	5-10	2-8	2-8
Black greasewood	SAVE4	5-15	2-10	20-30	---	5-15	15-30
Alkali rabbitbrush	CHAL9	1-2	---	---	---	---	---
Rubber rabbitbrush	CHNA2	1-2	2-5	---	---	---	---
Basin big sagebrush	ARTRT*	---	15-20	5-15	2-5	2-10	---
Wyoming big sagebrush	ARTRW*	---	---	5-10	---	---	---
Spiny hopsage	GRSP	---	---	5-15	---	---	---
Willow	SALIX	---	---	---	5-10	---	---
Silver sagebrush	ARCA13	---	---	---	2-5	---	---
Torrey quailbush	ATTO	---	---	---	---	30-50	---
Shadscale	ATCO	---	---	---	---	---	30-50
Bud sagebrush	ARSP5	---	---	---	---	---	5-15
Seepweed	SUAED	---	---	---	---	---	2-15
Other shrubs	SSSS	---	---	---	2-8	---	---
Range site number		O24XO07N	O24XO06N	O24XO22N	O25XO01N	O24XO15N	O24XO03N
Potential production (lb/acre):							
Favorable years		1,900	1,500	800	1,000	1,500	600
Normal years		1,400	1,100	600	1,500	1,200	450
Unfavorable years		800	600	350	1,800	800	300

1150--Weso fine sandy loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Weso	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5
Range site number		024X002N	024X002N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

1158--Whirlo very fine sandy loam, 2 to 4 percent slopes, occasionally flooded

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Whirlo	1	2	3
Bottlebrush squirreltail	SIHY	5-10	5-10	2-5	2-10
Basin wildrye	ELCI2	---	---	5-20	---
Indian ricegrass	ORHY	---	---	2-5	5-15
Thurber needlegrass	STTH2	---	---	---	10-20
Sandberg bluegrass	POSE	---	---	---	2-10
Other perennial grasses	PPGG	T-10	T-10	---	---
Thelypody	THELY	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2
Globemallow	SPHAE	---	---	---	1-2
Phlox	PHLOX	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	---	---
Shadscale	ATCO	30-50	30-50	---	---
Black greasewood	SAVE4	15-30	15-30	20-30	---
Bud sagebrush	ARSP5	5-15	5-15	---	---
Seepweed	SUAED	2-15	2-15	---	---
Basin big sagebrush	ARTRT*	---	---	5-15	---
Wyoming big sagebrush	ARTRW*	---	---	5-10	30-35
Spiny hopsage	GRSP	---	---	5-15	5-15
Range site number		O24XO03N	O24XO03N	O24XO22N	O24XO20N
Potential production (lb/acre):					
Favorable years		600	600	800	700
Normal years		450	450	600	450
Unfavorable years		300	300	350	300

1160--Whirlo gravelly loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Whirlo	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5
Range site number		024X002N	024X002N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

1162--Whirlo silt loam, 0 to 2 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Whirlo	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	10-20
Sandberg bluegrass	POSE	2-5	2-5	2-5	---
Needleandthread	STCO4	1-3	1-3	1-3	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5	---
Winterfat	EULA5	2-5	2-5	2-5	60-70
Range site number		024X002N	024X002N	024X002N	024X004N
Potential production (lb/acre):					
Favorable years		700	700	700	500
Normal years		450	450	450	350
Unfavorable years		300	300	300	200

1163--Whirlo silt loam, 2 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Whirlo	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	10-20
Sandberg bluegrass	POSE	2-5	2-5	2-5	---
Needleandthread	STC04	1-3	1-3	1-3	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATC0	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5	---
Winterfat	EULA5	2-5	2-5	2-5	60-70
Range site number		024X002N	024X002N	024X002N	024X004N
Potential production (lb/acre):					
Favorable years		700	700	700	500
Normal years		450	450	450	350
Unfavorable years		300	300	300	200

1165--Whirlo-Creemon association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Whirlo	Creemon	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	---	2-10
Indian ricegrass	ORHY	5-15	5-15	---	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	---	2-10
Needleandthread	STCO4	1-3	1-3	---	---	---
Basin wildrye	ELCI2	---	---	---	50-60	---
Western wheatgrass	AGSM	---	---	---	5-15	---
Thurber needlegrass	STTH2	---	---	---	---	10-20
Other perennial grasses	PPGG	---	---	T-10	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2
Globemallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	30-50	---	---
Bud sagebrush	ARSP5	20-30	20-30	5-15	---	---
Spiny hopsage	GRSP	2-5	2-5	---	---	5-15
Winterfat	EULA5	2-5	2-5	---	---	---
Black greasewood	SAVE4	---	---	15-30	2-10	---
Seepweed	SUAED	---	---	2-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	15-20	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35
Range site number		O24XOO2N	O24XOO2N	O24XOO3N	O24XOO6N	O24XO2ON
Potential production (lb/acre):						
Favorable years		700	700	600	1,500	700
Normal years		450	450	450	1,100	450
Unfavorable years		300	300	300	600	300

1166--Whirlo-Pumper silt loams

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name		Inclusion number--
		Whirlo	Pumper	1
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-10
Needleandthread	STCO4	1-3	1-3	---
Thurber needlegrass	STTH2	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	1-2
Globemallow	SPHAE	---	---	1-2
Phlox	PHLOX	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	---
Spiny hopsage	GRSP	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	30-35
Range site number		O24XO02N	O24XO02N	O24XO20N
Potential production (lb/acre):				
Favorable years		700	700	700
Normal years		450	450	450
Unfavorable years		300	300	300

1168--Whirlo-Oxcorel association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Whirlo	Oxcorel	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10	5-10
Indian ricegrass	ORHY	5-15	5-15	5-15	---
Sandberg bluegrass	POSE	2-5	2-5	2-10	---
Needleandthread	STCO4	1-3	1-3	---	---
Thurber needlegrass	STTH2	---	---	10-20	---
Other perennial grasses	PPGG	---	---	---	T-10
Tapertip hawksbeard	CRAC2	---	---	1-2	---
Globemallow	SPHAE	---	---	1-2	---
Phlox	PHLOX	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	---	30-50
Bud sagebrush	ARSP5	20-30	20-30	---	5-15
Spiny hopsage	GRSP	2-5	2-5	5-15	---
Winterfat	EULA5	2-5	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	30-35	---
Black greasewood	SAVE4	---	---	---	15-30
Seepweed	SUAED	---	---	---	2-15
Range site number		024X002N	024X002N	024X020N	024X003N
Potential production (lb/acre):					
Favorable years		700	700	700	600
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

1169--Whirlo-Broyles association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Whirlo	Broyles	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	---	2-10
Indian ricegrass	ORHY	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	2-10
Needleandthread	STCO4	1-3	1-3	---	---
Thurber needlegrass	STTH2	---	---	20-50	10-20
Bluebunch wheatgrass	AGSP	---	---	5-10	---
Balsamroot	BALSA	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	2-4	1-2
Globemallow	SPHAE	---	---	---	1-2
Phlox	PHLOX	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	---	---
Shadscale	ATCO	30-40	30-40	---	---
Bud sagebrush	ARSP5	20-30	20-30	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	30-35
Downy rabbitbrush	CHVIP	---	---	2-5	---
Other shrubs	SSSS	---	---	2-10	---
Range site number		024X002N	024X002N	024X005N	024X020N
Potential production (lb/acre):					
Favorable years		700	700	800	700
Normal years		450	450	600	450
Unfavorable years		300	300	400	300

1170--Wholan silt loam

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Wholan	1	2	3
Indian ricegrass	ORHY	10-20	5-15	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	5-15	5-15	5-15
Sandberg bluegrass	POSE	---	2-5	2-5	2-5
Needleandthread	STCO4	---	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Winterfat	EULA5	60-70	2-5	2-5	2-5
Bud sagebrush	ARSP5	2-5	20-30	20-30	20-30
Shadscale	ATCO	---	30-40	30-40	30-40
Spiny hopsage	GRSP	---	2-5	2-5	2-5
Range site number		O24XO04N	O24XO02N	O24XO02N	O24XO02N
Potential production (lb/acre):					
Favorable years		500	700	700	700
Normal years		350	450	450	450
Unfavorable years		200	300	300	300

1174--Wholan silt loam, sandy substratum

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Wholan	1	2
Indian ricegrass	ORHY	10-20	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	5-15	5-15
Sandberg bluegrass	POSE	---	2-5	2-5
Needleandthread	STCO4	---	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8
Winterfat	EULA5	60-70	2-5	2-5
Bud sagebrush	ARSP5	2-5	20-30	20-30
Shadscale	ATCO	---	30-40	30-40
Spiny hopsage	GRSP	---	2-5	2-5
Range site number		O24XO04N	O24XO02N	O24XO02N
Potential production (lb/acre):				
Favorable years		500	700	700
Normal years		350	450	450
Unfavorable years		200	300	300

1177--Wholan, strongly alkaline-Rasille association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Wholan	Rasille	1	2	3
Indian ricegrass	ORHY	10-30	---	---	5-15	5-15
Bottlebrush squirreltail	SIHY	5-10	---	---	2-10	5-15
Alkali sacaton	SPAI	T-5	---	---	---	---
Thurber needlegrass	STTH2	---	20-50	---	10-20	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---
Basin wildrye	ELCI2	---	---	50-60	---	---
Western wheatgrass	AGSM	---	---	5-15	---	---
Sandberg bluegrass	POSE	---	---	---	2-10	2-5
Needleandthread	STCO4	---	---	---	---	1-3
Balsamroot	BALSA	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	1-2	---
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	T-5	---	2-8	---	2-8
Saltbush	ATRIP	50-65	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	30-35	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---
Spiny hopsage	GRSP	---	2-5	---	5-15	2-5
Basin big sagebrush	ARTRT*	---	---	15-20	---	---
Black greasewood	SAVE4	---	---	2-10	---	---
Rubber rabbitbrush	CHNA2	---	---	2-5	---	---
Shadscale	ATCO	---	---	---	---	30-40
Bud sagebrush	ARSP5	---	---	---	---	20-30
Winterfat	EULA5	---	---	---	---	2-5
Other shrubs	SSSS	---	2-10	---	---	---
Range site number		O24XO12N	O24XOO5N	O24XOO6N	O24XO20N	O24XOO2N
Potential production (lb/acre):						
Favorable years		700	800	1,500	700	700
Normal years		400	600	1,100	450	450
Unfavorable years		200	400	600	300	300

1178--Wholan-Rasille association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Wholan	Rasille	1	2	3
Indian ricegrass	ORHY	10-20	20-30	10-30	5-15	20-30
Bottlebrush squirreltail	SIHY	2-10	5-10	5-10	5-15	5-10
Needleandthread	STCO4	---	10-20	---	1-3	10-20
Sandberg bluegrass	POSE	---	2-5	---	2-5	2-5
Alkali sacaton	SPAI	---	---	T-5	---	---
Perennial forbs	PPFF	2-8	2-5	T-5	2-8	2-5
Winterfat	EULA5	60-70	---	---	2-5	---
Bud sagebrush	ARSP5	2-5	---	---	20-30	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	---	15-20
Saltbush	ATRIP	---	---	50-65	---	---
Shadscale	ATCO	---	---	---	30-40	---
Spiny hopsage	GRSP	---	---	---	2-5	---
Other shrubs	SSSS	---	5-15	---	---	5-15
Range site number		024X004N	028B010N	024X012N	024X002N	028B010N
Potential production (lb/acre):						
Favorable years		500	800	700	700	800
Normal years		350	600	400	450	600
Unfavorable years		200	400	200	300	400

1201--Slaven-Linrose-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Slaven	Linrose	Cleavage	1	2	3
Bluebunch wheatgrass	AGSP	20-50	2-10	15-30	20-30	---	5-10
Basin wildrye	ELCI2	5-10	---	---	2-15	---	---
Mountain brome	BRMA4	2-15	---	---	---	---	2-5
Thurber needlegrass	STTH2	2-5	---	2-10	2-10	---	---
Bottlebrush squirreltail	SIHY	2-5	---	---	---	---	---
Idaho fescue	FEID	1-10	30-60	25-50	20-40	---	30-60
Cusick bluegrass	POCU3	---	5-10	---	---	---	5-10
Spike fescue	HEKI	---	---	2-10	---	---	---
Sedge	CAREX	---	---	---	---	---	2-5
Tapertip hawksbeard	CRAC2	2-5	2-5	---	1-5	---	1-3
Arrowleaf balsamroot	BASA3	2-5	---	---	1-5	---	---
Balsamroot	BALSA	---	---	2-5	---	---	---
Lupine	LUPIN	---	---	---	---	---	1-2
Mountain big sagebrush	ARTRV	5-15	---	---	5-15	---	5-15
Black sagebrush	ARARN	---	10-20	---	---	---	---
Low sagebrush	ARAR8	---	---	10-20	---	---	---
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---	---
Snowberry	SYMPH	---	---	---	---	---	2-5
Range site number		024X029N	024X042N	024X027N	024X021N	None	024X023N
Potential production (lb/acre):							
Favorable years		1,500	1,000	1,200	1,400	---	1,500
Normal years		1,100	800	800	1,000	---	1,200
Unfavorable years		800	500	600	700	---	900

1202--Slaven-Wiskan-Graley Variant association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Slaven	Wiskan	Graley Variant	1	2	3
Bluebunch wheatgrass	AGSP	20-50	10-20	40-60	5-10	15-30	---
Basin wildrye	ELCI2	5-10	---	2-5	---	---	---
Mountain brome	BRMA4	2-15	---	---	2-5	---	---
Thurber needlegrass	STTH2	2-5	5-15	5-10	---	2-10	---
Bottlebrush squirreltail	SIHY	2-5	---	---	---	---	---
Idaho fescue	FEID	1-10	---	---	30-60	25-50	---
Indian ricegrass	ORHY	---	2-10	---	---	---	---
Bluegrass	POA++	---	2-10	2-10	---	---	---
Cusick bluegrass	POCU3	---	---	---	5-10	---	---
Sedge	CAREX	---	---	---	2-5	---	---
Spike fescue	HEKI	---	---	---	---	2-10	---
Tapertip hawksbeard	CRAC2	2-5	2-5	2-5	1-3	---	---
Arrowleaf balsamroot	BASA3	2-5	---	2-5	---	---	---
Lupine	LUPIN	---	---	---	1-2	---	---
Balsamroot	BALSA	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	5-15	---	---	---	---
Mountain big sagebrush	ARTRV	5-15	---	T-5	5-15	---	---
Black sagebrush	ARARN	---	15-30	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	5-10	---	---	---
Snowberry	SYMPH	---	---	---	2-5	---	---
Low sagebrush	ARAR8	---	---	---	---	10-20	---
Douglas rabbitbrush	CHVI8	---	---	---	---	2-5	---
Range site number		024X029N	024X031N	024X028N	024X023N	024X027N	None
Potential production (lb/acre):							
Favorable years		1,500	700	1,000	1,500	1,200	---
Normal years		1,100	500	700	1,200	800	---
Unfavorable years		800	300	500	900	600	---

1203--Slaven-Glean-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Slaven	Glean	Cleavage	1	2	3
Bluebunch wheatgrass	AGSP	20-50	5-10	15-30	5-10	---	20-50
Basin wildrye	ELCI2	5-10	---	---	---	---	5-10
Mountain brome	BRMA4	2-15	2-5	---	10-15	---	2-15
Thurber needlegrass	STTH2	2-5	---	2-10	---	---	2-5
Bottlebrush squirreltail	SIHY	2-5	---	---	---	5-10	2-5
Idaho fescue	FEID	1-10	30-60	25-50	5-15	10-20	1-10
Cusick bluegrass	POCU3	---	5-10	---	---	2-5	---
Sedge	CAREX	---	2-5	---	---	---	---
Spike fescue	HEKI	---	---	2-10	2-15	---	---
Slender wheatgrass	AGTR	---	---	---	10-15	---	---
Bearded wheatgrass	AGSU	---	---	---	10-15	---	---
Bulbous oniongrass	MEBU	---	---	---	2-5	---	---
Nevada bluegrass	PONE3	---	---	---	2-5	---	---
Webber ricegrass	ORWE	---	---	---	---	5-10	---
Sandberg bluegrass	POSE	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	2-5	---
Tapertip hawksbeard	CRAC2	2-5	1-3	---	---	---	2-5
Arrowleaf balsamroot	BASA3	2-5	---	---	---	---	2-5
Lupine	LUPIN	---	1-2	---	2-5	---	---
Balsamroot	BALSA	---	---	2-5	---	---	---
Geranium	GERAN	---	---	---	2-5	---	---
Groundsel	SENEC	---	---	---	2-5	---	---
Goldenweed	HAPLO2	---	---	---	---	2-5	---
Phlox	PHLOX	---	---	---	---	2-5	---
Mountain big sagebrush	ARTRV	5-15	5-15	---	5-10	---	5-15
Snowberry	SYMPH	---	2-5	---	2-10	---	---
Low sagebrush	ARAR8	---	---	10-20	---	5-15	---
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---	---
Serviceberry	AMELA	---	---	---	5-10	---	---
Black sagebrush	ARARN	---	---	---	---	5-15	---
Range site number		O24XO29N	O24XO23N	O24XO27N	O24XO32N	O24XO16N	O24XO29N
Potential production (lb/acre):							
Favorable years		1,500	1,500	1,200	2,200	350	1,500
Normal years		1,100	1,200	800	1,700	250	1,100
Unfavorable years		800	900	600	1,200	150	800

1212--Wiskan-Roca-Bregar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Wiskan	Roca	Bregar	1	2	3
Bluebunch wheatgrass	AGSP	10-20	40-60	---	2-10	15-25	5-10
Thurber needlegrass	STTH2	5-15	5-10	---	---	15-25	---
Indian ricegrass	ORHY	2-10	---	---	---	---	---
Bluegrass	POA++	2-10	2-10	---	---	---	---
Basin wildrye	ELCI2	---	2-5	---	---	---	---
Idaho fescue	FEID	---	---	10-20	30-60	---	30-60
Webber ricegrass	ORWE	---	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	---	2-5	5-10	---	5-10
Sandberg bluegrass	POSE	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---
Mountain brome	BRMA4	---	---	---	---	---	2-5
Sedge	CAREX	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	10-20	---
Tapertip hawksbeard	CRAC2	2-5	2-5	---	2-5	2-5	1-3
Arrowleaf balsamroot	BASA3	---	2-5	---	---	2-5	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---
Lupine	LUPIN	---	---	---	---	---	1-2
Other perennial forbs	PPFF	5-15	---	---	---	2-10	---
Black sagebrush	ARARN	15-30	---	5-15	10-20	---	---
Wyoming big sagebrush	ARTRW*	---	5-10	---	---	5-10	---
Mountain big sagebrush	ARTRV	---	T-5	---	---	5-10	5-15
Low sagebrush	ARAR8	---	---	5-15	---	---	---
Snowberry	SYMPH	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	2-10	---
Range site number		O24XO31N	O24XO28N	O24XO16N	O24XO42N	O24XO35N	O24XO23N
Potential production (lb/acre):							
Favorable years		700	1,000	350	1,000	500	1,500
Normal years		500	700	250	800	400	1,200
Unfavorable years		300	500	150	500	250	900

1215--Wiskan-Locane association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Wiskan	Locane	1	2	3
Bluebunch wheatgrass	AGSP	10-20	15-25	---	5-10	10-20
Thurber needlegrass	STTH2	5-15	15-25	---	---	5-15
Indian ricegrass	ORHY	2-10	---	---	---	2-10
Bluegrass	POA++	2-10	---	---	---	2-10
Idaho fescue	FEID	---	---	10-20	30-60	---
Webber ricegrass	ORWE	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---
Cusick bluegrass	POCU3	---	---	2-5	5-10	---
Sandberg bluegrass	POSE	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	2-5	---	---
Mountain brome	BRMA4	---	---	---	2-5	---
Sedge	CAREX	---	---	---	2-5	---
Other perennial grasses	PPGG	---	10-20	---	---	---
Tapertip hawksbeard	CRAC2	2-5	2-5	---	1-3	2-5
Arrowleaf balsamroot	BASA3	---	2-5	---	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---
Phlox	PHLOX	---	---	2-5	---	---
Lupine	LUPIN	---	---	---	1-2	---
Other perennial forbs	PPFF	5-15	2-10	---	---	5-15
Black sagebrush	ARARN	15-30	---	5-15	---	15-30
Wyoming big sagebrush	ARTRW*	---	5-10	---	---	---
Mountain big sagebrush	ARTRV	---	5-10	---	5-15	---
Low sagebrush	ARAR8	---	---	5-15	---	---
Snowberry	SYMPH	---	---	---	2-5	---
Other shrubs	SSSS	---	2-10	---	---	---
Range site number		O24XO31N	O24XO35N	O24XO16N	O24XO23N	O24XO31N
Potential production (lb/acre):						
Favorable years		700	500	350	1,500	700
Normal years		500	400	250	1,200	500
Unfavorable years		300	250	150	900	300

1216--Wiskan-Linrose association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Wiskan	Linrose	1	2	3
Bluebunch wheatgrass	AGSP	10-20	2-10	20-50	---	---
Thurber needlegrass	STTH2	5-15	---	2-5	---	---
Indian ricegrass	ORHY	2-10	---	---	---	---
Bluegrass	POA++	2-10	---	---	---	---
Idaho fescue	FEID	---	30-60	1-10	---	10-20
Cusick bluegrass	POCU3	---	5-10	---	---	2-5
Basin wildrye	ELCI2	---	---	5-10	---	---
Mountain brome	BRMA4	---	---	2-15	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	5-10
Webber ricegrass	ORWE	---	---	---	---	5-10
Sandberg bluegrass	POSE	---	---	---	---	2-5
Pine bluegrass	POSC	---	---	---	---	2-5
Tapertip hawksbeard	CRAC2	2-5	2-5	2-5	---	---
Arrowleaf balsamroot	BASA3	---	---	2-5	---	---
Goldenweed	HAPLO2	---	---	---	---	2-5
Phlox	PHLOX	---	---	---	---	2-5
Other perennial forbs	PPFF	5-15	---	---	---	---
Black sagebrush	ARARN	15-30	10-20	---	---	5-15
Mountain big sagebrush	ARTRV	---	---	5-15	---	---
Low sagebrush	ARAR8	---	---	---	---	5-15
Range site number		O24XO31N	O24XO42N	O24XO29N	None	O24XO16N
Potential production (lb/acre):						
Favorable years		700	1,000	1,500	---	350
Normal years		500	800	1,100	---	250
Unfavorable years		300	500	800	---	150

1220--Boulflat-Havingdon-Dewar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Boulflat	Havingdon	Dewar	1	2
Thurber needlegrass	STTH2	20-50	15-25	20-50	20-50	---
Bluebunch wheatgrass	AGSP	5-10	15-25	5-10	5-10	---
Other perennial grasses	PPGG	---	10-20	---	---	---
Balsamroot	BALSA	2-4	---	2-4	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-5	2-4	2-4	---
Arrowleaf balsamroot	BASA3	---	2-5	---	---	---
Other perennial forbs	PPFF	---	2-10	---	---	---
Wyoming big sagebrush	ARTRW*	15-20	5-10	15-20	15-20	---
Downy rabbitbrush	CHVIP	2-5	---	2-5	2-5	---
Spiny hopsage	GRSP	2-5	---	2-5	2-5	---
Mountain big sagebrush	ARTRV	---	5-10	---	---	---
Other shrubs	SSSS	2-10	2-10	2-10	2-10	---
Range site number		024X005N	024X035N	024X005N	024X005N	None
Potential production (lb/acre):						
Favorable years		800	500	800	800	---
Normal years		600	400	600	600	---
Unfavorable years		400	250	400	400	---

1221--Boulflat-Colbar-Old Camp association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Boulflat	Colbar	Old Camp	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	20-50	10-20	---	---
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	---	---	---
Indian ricegrass	ORHY	---	---	---	5-15	5-15	5-15
Bottlebrush squirreltail	SIHY	---	---	---	2-10	5-15	5-15
Sandberg bluegrass	POSE	---	---	---	2-10	2-5	2-5
Needleandthread	STCO4	---	---	---	---	1-3	1-3
Balsamroot	BALSA	2-4	2-4	2-4	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	1-2	---	---
Globemallow	SPHAE	---	---	---	1-2	---	---
Phlox	PHLOX	---	---	---	1-2	---	---
Other perennial forbs	PPFF	---	---	---	---	2-8	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	30-35	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5	2-5
Shadscale	ATCO	---	---	---	---	30-40	30-40
Bud sagebrush	ARSP5	---	---	---	---	20-30	20-30
Winterfat	EULA5	---	---	---	---	2-5	2-5
Other shrubs	SSSS	2-10	2-10	2-10	---	---	---
Range site number		O24XO05N	O24XO05N	O24XO05N	O24XO20N	O24XO02N	O24XO02N
Potential production (lb/acre):							
Favorable years		800	800	800	700	700	700
Normal years		600	600	600	450	450	450
Unfavorable years		400	400	400	300	300	300

1240--Redflame-Kingingham association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Redflame	Kingingham	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-5
Needleandthread	STCO4	1-3	1-3	1-3	---	1-3
Thurber needlegrass	STTH2	---	---	---	10-20	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	2-5	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	---
Range site number		024X002N	024X002N	024X002N	024X020N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

1263--Graley-Loncan-Bregar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Graley	Loncan	Bregar	1	2	3
Bluebunch wheatgrass	AGSP	20-50	20-30	---	5-10	10-20	---
Basin wildrye	ELCI2	5-10	2-15	---	---	---	---
Mountain brome	BRMA4	2-15	---	---	2-5	---	---
Thurber needlegrass	STTH2	2-5	2-10	---	---	5-15	---
Bottlebrush squirreltail	SIHY	2-5	---	5-10	---	---	---
Idaho fescue	FEID	1-10	20-40	10-20	30-60	---	---
Webber ricegrass	ORWE	---	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	---	2-5	5-10	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---
Sedge	CAREX	---	---	---	2-5	---	---
Indian ricegrass	ORHY	---	---	---	---	2-10	---
Bluegrass	POA++	---	---	---	---	2-10	---
Tapertip hawksbeard	CRAC2	2-5	1-5	---	1-3	2-5	---
Arrowleaf balsamroot	BASA3	2-5	1-5	---	---	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---
Lupine	LUPIN	---	---	---	1-2	---	---
Other perennial forbs	PPFF	---	---	---	---	5-15	---
Mountain big sagebrush	ARTRV	5-15	5-15	---	5-15	---	---
Low sagebrush	ARAR8	---	---	5-15	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	15-30	---
Snowberry	SYMPH	---	---	---	2-5	---	---
Range site number		024X029N	024X021N	024X016N	024X023N	024X031N	None
Potential production (lb/acre):							
Favorable years		1,500	1,400	350	1,500	700	---
Normal years		1,100	1,000	250	1,200	500	---
Unfavorable years		800	700	150	900	300	---

1280--Ricert-Oxcorel-Whirlo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Ricert	Oxcorel	Whirlo	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-10
Needleandthread	STC04	1-3	1-3	1-3	---	---
Thurber needlegrass	STTH2	---	---	---	10-20	10-20
Tapertip hawksbeard	CRAC2	---	---	---	1-2	1-2
Globemallow	SPHAE	---	---	---	1-2	1-2
Phlox	PHLOX	---	---	---	1-2	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	---	---
Shadscale	ATCO	30-40	30-40	30-40	---	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	5-15
Winterfat	EULA5	2-5	2-5	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	30-35
Range site number		024X002N	024X002N	024X002N	024X020N	024X020N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

1281--Ricert-Whirlo-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Ricert	Whirlo	Pineval	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-10	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	20-30	5-15	2-10	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	10-20	1-3	---	1-3
Webber ricegrass	ORWE	---	---	---	---	2-10	---
Thurber needlegrass	STTH2	---	---	---	---	2-5	---
Desert needlegrass	STSP3	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	2-5	---
Eriogonum	ERIOG	---	---	---	---	1-2	---
Hawksbeard	CREPI	---	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-5	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	---	30-40	10-25	30-40
Bud sagebrush	ARSP5	20-30	20-30	---	20-30	2-5	20-30
Spiny hopsage	GRSP	2-5	2-5	---	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	---	2-5	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	10-25	---
Downy rabbitbrush	CHVIP	---	---	---	---	2-5	---
Other shrubs	SSSS	---	---	5-15	---	---	---
Range site number		024X002N	024X002N	028B010N	024X002N	024X026N	024X002N
Potential production (lb/acre):							
Favorable years		700	700	800	700	400	700
Normal years		450	450	600	450	300	450
Unfavorable years		300	300	400	300	200	300

1283--Ricert-Kingingham-Oxcorel association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Ricert	Kingingham	Oxcorel	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15	5-10	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	---	2-10
Needleandthread	STCO4	1-3	1-3	1-3	1-3	---	---
Thurber needlegrass	STTH2	---	---	---	---	---	10-20
Other perennial grasses	PPGG	---	---	---	---	T-10	---
Tapertip hawksbeard	CRAC2	---	---	---	---	---	1-2
Globemallow	SPHAE	---	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	30-40	30-40	30-50	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30	5-15	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	---	5-15
Winterfat	EULA5	2-5	2-5	2-5	2-5	---	---
Black greasewood	SAVE4	---	---	---	---	15-30	---
Seepweed	SUAED	---	---	---	---	2-15	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	---	30-35
Range site number		O24XOO2N	O24XOO2N	O24XOO2N	O24XOO2N	O24XOO3N	O24XO20N
Potential production (lb/acre):							
Favorable years		700	700	700	700	600	700
Normal years		450	450	450	450	450	450
Unfavorable years		300	300	300	300	300	300

1291--Kingingham-Tenabo-Sodhouse association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Kingingham	Tenabo	Sodhouse	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15	5-10	---
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	20-30	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-5	---
Needleandthread	STCO4	1-3	1-3	1-3	1-3	10-20	---
Basin wildrye	ELCI2	---	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	---	15-20
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-5	5-10
Shadscale	ATCO	30-40	30-40	30-40	30-40	---	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	---	---
Winterfat	EULA5	2-5	2-5	2-5	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	15-20	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Other shrubs	SSSS	---	---	---	---	5-15	2-5
Range site number		024X002N	024X002N	024X002N	024X002N	028B010N	025X003N
Potential production (lb/acre):							
Favorable years		700	700	700	700	800	2,500
Normal years		450	450	450	450	600	1,900
Unfavorable years		300	300	300	300	400	1,200

1292--Kingingham-Golconda-Whirlo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Kingingham	Golconda	Whirlo	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-10	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3	---	1-3
Thurber needlegrass	STTH2	---	---	---	---	10-20	---
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35	---
Range site number		O24XOO2N	O24XOO2N	O24XOO2N	O24XOO2N	O24XO2ON	O24XOO2N
Potential production (lb/acre):							
Favorable years		700	700	700	700	700	700
Normal years		450	450	450	450	450	450
Unfavorable years		300	300	300	300	300	300

1293--Kingingham-Oxcorel association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Kingingham	Oxcorel	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-10	2-10	2-5
Needleandthread	STCO4	1-3	1-3	---	---	1-3
Thurber needlegrass	STTH2	---	---	10-20	10-20	---
Tapertip hawksbeard	CRAC2	---	---	1-2	1-2	---
Globemallow	SPHAE	---	---	1-2	1-2	---
Phlox	PHLOX	---	---	1-2	1-2	---
Other perennial forbs	PPFF	2-8	2-8	---	---	2-8
Shadscale	ATCO	30-40	30-40	---	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	---	---	20-30
Spiny hopsage	GRSP	2-5	2-5	5-15	5-15	2-5
Winterfat	EULA5	2-5	2-5	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	30-35	30-35	---
Range site number		024X002N	024X002N	024X020N	024X020N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

1294--Kingingham-Whirlo-Beoska association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Kingingham	Whirlo	Beoska	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-5	2-10
Needleandthread	STCO4	1-3	1-3	1-3	---	1-3	---
Thurber needlegrass	STTH2	---	---	---	10-20	---	10-20
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---	1-2
Globemallow	SPHAE	---	---	---	1-2	---	1-2
Phlox	PHLOX	---	---	---	1-2	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8	---
Shadscale	ATCO	30-40	30-40	30-40	---	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	20-30	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5	5-15
Winterfat	EULA5	2-5	2-5	2-5	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	---	30-35
Range site number		O24XO02N	O24XO02N	O24XO02N	O24XO20N	O24XO02N	O24XO20N
Potential production (lb/acre):							
Favorable years		700	700	700	700	700	700
Normal years		450	450	450	450	450	450
Unfavorable years		300	300	300	300	300	300

1342--Doowak, cobbly-Doowak-Veta association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Doowak, cobbly	Doowak	Veta	1	2
Basin wildrye	ELCI2	10-20	---	---	---	---
Indian ricegrass	ORHY	2-10	5-15	---	---	5-15
Bottlebrush squirreltail	SIHY	2-5	2-10	---	---	2-10
Sandberg bluegrass	POSE	2-5	2-10	---	---	2-10
Thurber needlegrass	STTH2	---	10-20	20-50	20-50	10-20
Bluebunch wheatgrass	AGSP	---	---	5-10	5-10	---
Tapertip hawksbeard	CRAC2	---	1-2	2-4	2-4	1-2
Globemallow	SPHAE	---	1-2	---	---	1-2
Phlox	PHLOX	---	1-2	---	---	1-2
Balsamroot	BALSA	---	---	2-4	2-4	---
Spiny hopsage	GRSP	15-30	5-15	2-5	2-5	5-15
Basin big sagebrush	ARTRT*	15-25	---	---	---	---
Black greasewood	SAVE4	2-10	---	---	---	---
Anderson peachbrush	PRAN2	2-10	---	---	---	---
Rubber rabbitbrush	CHNA2	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	30-35	15-20	15-20	30-35
Downy rabbitbrush	CHVIP	---	---	2-5	2-5	---
Other shrubs	SSSS	---	---	2-10	2-10	---
Range site number		O24XO41N	O24XO20N	O24XO05N	O24XO05N	O24XO20N
Potential production (lb/acre):						
Favorable years		1,000	700	800	800	700
Normal years		800	450	600	600	450
Unfavorable years		600	300	400	400	300

1392--Rock outcrop-Loncan Variant-Glean association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Rock outcrop	Loncan Variant	Glean	1	2	3
Bluebunch wheatgrass	AGSP	---	X	5-10	X	2-10	---
Indian ricegrass	ORHY	---	X	---	---	---	---
Thurber needlegrass	STTH2	---	X	---	X	---	---
Bluegrass	POA++	---	X	---	---	---	---
Idaho fescue	FEID	---	---	30-60	X	30-60	10-20
Cusick bluegrass	POCU3	---	---	5-10	---	5-10	2-5
Mountain brome	BRMA4	---	---	2-5	---	---	---
Sedge	CAREX	---	---	2-5	---	---	---
Basin wildrye	ELCI2	---	---	---	X	---	---
Nevada bluegrass	PONE3	---	---	---	X	---	---
Webber ricegrass	ORWE	---	---	---	---	---	5-10
Bottlebrush squirreltail	SIHY	---	---	---	---	---	5-10
Sandberg bluegrass	POSE	---	---	---	---	---	2-5
Pine bluegrass	POSC	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	X	---	---	---	---
Tapertip hawksbeard	CRAC2	---	X	1-3	X	2-5	---
Arrowleaf balsamroot	BASA3	---	X	---	X	---	---
Lupine	LUPIN	---	---	1-2	---	---	---
Goldenweed	HAPLO2	---	---	---	---	---	2-5
Phlox	PHLOX	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	X	---	---	---	---
Black sagebrush	ARARN	---	X	---	---	10-20	5-15
Downy rabbitbrush	CHVIP	---	X	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	5-15	---	---	---
Snowberry	SYMPH	---	---	2-5	X	---	---
Big sagebrush	ARTR2	---	---	---	X	---	---
Currant	RIBES	---	---	---	X	---	---
Low sagebrush	ARAR8	---	---	---	---	---	5-15
Utah juniper	JUOS	---	X	---	X	---	---
Singleleaf pinyon	PIMO	---	X	---	X	---	---
Range site number		None	O25XO63N	O24XO23N	O25XO62N	O24XO42N	O24XO16N
Potential production (lb/acre):							
Favorable years		---	400	1,500	500	1,000	350
Normal years		---	250	1,200	350	800	250
Unfavorable years		---	150	900	200	500	150

1400--Koynik, steep-Koynik-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Koynik, steep	Koynik	Rock outcrop	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	---	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	---	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	2-5	2-10	2-5
Needleandthread	STCO4	1-3	1-3	---	1-3	---	1-3
Thurber needlegrass	STTH2	---	---	---	---	10-20	---
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	---	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	---	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	---	20-30	---	20-30
Spiny hopsage	GRSP	2-5	2-5	---	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	---	2-5	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35	---
Range site number		024X002N	024X002N	None	024X002N	024X020N	024X002N
Potential production (lb/acre):							
Favorable years		700	700	---	700	700	700
Normal years		450	450	---	450	450	450
Unfavorable years		300	300	---	300	300	300

1410--Bojo-Stingdorn association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Bojo	Stringdorn	1	2	3
Thurber needlegrass	STTH2	10-20	---	---	10-20	---
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	---
Bottlebrush squirreltail	SIHY	2-10	5-15	5-15	2-10	---
Sandberg bluegrass	POSE	2-10	2-5	2-5	2-10	---
Needleandthread	STCO4	---	1-3	1-3	---	---
Tapertip hawksbeard	CRAC2	1-2	---	---	1-2	---
Globemallow	SPHAE	1-2	---	---	1-2	---
Phlox	PHLOX	1-2	---	---	1-2	---
Other perennial forbs	PPFF	---	2-8	2-8	---	---
Wyoming big sagebrush	ARTRW*	30-35	---	---	30-35	---
Spiny hopsage	GRSP	5-15	2-5	2-5	5-15	---
Shadscale	ATCO	---	30-40	30-40	---	---
Bud sagebrush	ARSP5	---	20-30	20-30	---	---
Winterfat	EULA5	---	2-5	2-5	---	---
Range site number		O24XO20N	O24XOO2N	O24XOO2N	O24XO20N	None
Potential production (lb/acre):						
Favorable years		700	700	700	700	---
Normal years		450	450	450	450	---
Unfavorable years		300	300	300	300	---

1411--Bojo-Rock outcrop-Osoll association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Bojo	Rock outcrop	Osoll	1	2	3
Thurber needlegrass	STTH2	10-20	---	---	---	---	20-50
Indian ricegrass	ORHY	5-15	---	5-15	5-15	5-15	---
Bottlebrush squirreltail	SIHY	2-10	---	5-15	5-15	5-15	---
Sandberg bluegrass	POSE	2-10	---	2-5	2-5	2-5	---
Needleandthread	STCO4	---	---	1-3	1-3	1-3	---
Bluebunch wheatgrass	AGSP	---	---	---	---	---	5-10
Tapertip hawksbeard	CRAC2	1-2	---	---	---	---	2-4
Globemallow	SPHAE	1-2	---	---	---	---	---
Phlox	PHLOX	1-2	---	---	---	---	---
Balsamroot	BALSA	---	---	---	---	---	2-4
Other perennial forbs	PPFF	---	---	2-8	2-8	2-8	---
Wyoming big sagebrush	ARTRW*	30-35	---	---	---	---	15-20
Spiny hopsage	GRSP	5-15	---	2-5	2-5	2-5	2-5
Shadscale	ATCO	---	---	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	---	---	20-30	20-30	20-30	---
Winterfat	EULA5	---	---	2-5	2-5	2-5	---
Downy rabbitbrush	CHVIP	---	---	---	---	---	2-5
Range site number		024X020N	None	024X002N	024X002N	024X002N	024X005N
Potential production (lb/acre):							
Favorable years		700	---	700	700	700	800
Normal years		450	---	450	450	450	600
Unfavorable years		300	---	300	300	300	400

1412--Bojo-Humdun-Boulflat association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Bojo	Humdun	Boulflat	1	2	3
Bottlebrush squirreltail	SIHY	2-10	---	---	---	---	2-5
Indian ricegrass	ORHY	2-10	---	---	---	---	2-10
Webber ricegrass	ORWE	2-10	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	20-50	20-50	15-25	20-50	---
Desert needlegrass	STSP3	2-5	---	---	---	---	---
Sandberg bluegrass	POSE	2-5	---	---	---	---	2-5
Pine bluegrass	POSC	2-5	---	---	---	---	---
Bluebunch wheatgrass	AGSP	---	5-10	5-10	15-25	5-10	---
Basin wildrye	ELCI2	---	---	---	---	---	10-20
Other perennial grasses	PPGG	---	---	---	10-20	---	---
Eriogonum	ERIOG	1-2	---	---	---	---	---
Hawksbeard	CREPI	1-2	---	---	---	---	---
Balsamroot	BALSA	---	2-4	2-4	---	2-4	---
Tapertip hawksbeard	CRAC2	---	2-4	2-4	2-5	2-4	---
Arrowleaf balsamroot	BASA3	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	---	---	2-10	---	---
Wyoming big sagebrush	ARTRW*	10-25	15-20	15-20	5-10	15-20	---
Shadscale	ATCO	10-25	---	---	---	---	---
Spiny hopsage	GRSP	5-15	2-5	2-5	---	2-5	15-30
Bud sagebrush	ARSP5	2-5	---	---	---	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---	2-5	---
Mountain big sagebrush	ARTRV	---	---	---	5-10	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	15-25
Black greasewood	SAVE4	---	---	---	---	---	2-10
Anderson peachbrush	PRAN2	---	---	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	---	2-10	2-10	2-10	2-10	---
Range site number		024X026N	024X005N	024X005N	024X035N	024X005N	024X041N
Potential production (lb/acre):							
Favorable years		400	800	800	500	800	1,000
Normal years		300	600	600	400	600	800
Unfavorable years		200	400	400	250	400	600

1420--Sumine-Reluctan-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Sumine	Reluctan	Cleavage	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	20-30	---	10-20	---	---	20-30
Basin wildrye	ELCI2	5-10	2-15	---	---	---	---	2-15
Mountain brome	BRMA4	2-15	---	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	2-10	---	5-15	---	---	2-10
Bottlebrush squirreltail	SIHY	2-5	---	5-10	---	---	---	---
Idaho fescue	FEID	1-10	20-40	10-20	---	---	---	20-40
Webber ricegrass	ORWE	---	---	5-10	---	---	---	---
Cusick bluegrass	POCU3	---	---	2-5	---	---	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---	---
Indian ricegrass	ORHY	---	---	---	2-10	---	---	---
Bluegrass	POA++	---	---	---	2-10	---	---	---
Tapertip hawksbeard	CRAC2	2-5	1-5	---	2-5	---	---	---
Arrowleaf balsamroot	BASA3	2-5	1-5	---	---	---	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	---	---	5-15	---	---	---
Mountain big sagebrush	ARTRV	5-15	5-15	---	---	---	---	5-15
Low sagebrush	ARAR8	---	---	5-15	---	---	---	---
Black sagebrush	ARARN	---	---	5-15	15-30	---	---	---
Range site number		O24XO29N	O24XO21N	O24XO16N	O24XO31N	None	None	O24XO21N
Potential production (lb/acre):								
Favorable years		1,500	1,400	350	700	---	---	1,400
Normal years		1,100	1,000	250	500	---	---	1,000
Unfavorable years		800	700	150	300	---	---	700

1421--Sumine-Softscrabble-Walti association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Sumine	Softscrabble	Walti	1	2	3
Bluebunch wheatgrass	AGSP	20-50	20-30	15-30	---	---	---
Basin wildrye	ELCI2	5-10	2-15	---	---	---	---
Mountain brome	BRMA4	2-15	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	2-10	2-10	---	---	---
Bottlebrush squirreltail	SIHY	2-5	---	---	---	5-10	---
Idaho fescue	FEID	1-10	20-40	25-50	---	10-20	---
Spike fescue	HEKI	---	---	2-10	---	---	---
Webber ricegrass	ORWE	---	---	---	---	5-10	---
Cusick bluegrass	POCU3	---	---	---	---	2-5	---
Sandberg bluegrass	POSE	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	2-5	---
Tapertip hawksbeard	CRAC2	2-5	1-5	---	---	---	---
Arrowleaf balsamroot	BASA3	2-5	1-5	---	---	---	---
Balsamroot	BALSA	---	---	2-5	---	---	---
Goldenweed	HAPLO2	---	---	---	---	2-5	---
Phlox	PHLOX	---	---	---	---	2-5	---
Mountain big sagebrush	ARTRV	5-15	5-15	---	---	---	---
Low sagebrush	ARAR8	---	---	10-20	---	5-15	---
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---	---
Black sagebrush	ARARN	---	---	---	---	5-15	---
Range site number		O24XO29N	O24XO21N	O24XO27N	None	O24XO16N	None
Potential production (lb/acre):							
Favorable years		1,500	1,400	1,200	---	350	---
Normal years		1,100	1,000	800	---	250	---
Unfavorable years		800	700	600	---	150	---

1422--Sumine-Hapgood-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Sumine	Hapgood	Cleavage	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	5-10	---	5-10	20-30	---	---
Basin wildrye	ELCI2	5-10	---	---	---	2-15	---	5-10
Mountain brome	BRMA4	2-15	10-15	---	2-5	---	---	---
Thurber needlegrass	STTH2	2-5	---	---	---	2-10	---	---
Bottlebrush squirreltail	SIHY	2-5	---	5-10	---	---	---	---
Idaho fescue	FEID	1-10	5-15	10-20	30-60	20-40	---	---
Slender wheatgrass	AGTR	---	10-15	---	---	---	---	2-5
Bearded wheatgrass	AGSU	---	10-15	---	---	---	---	1-10
Spike fescue	HEKI	---	2-15	---	---	---	---	---
Bulbous oniongrass	MEBU	---	2-5	---	---	---	---	---
Nevada bluegrass	PONE3	---	2-5	---	---	---	---	---
Webber ricegrass	ORWE	---	---	5-10	---	---	---	---
Cusick bluegrass	POCU3	---	---	2-5	5-10	---	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---	---
Sedge	CAREX	---	---	---	2-5	---	---	---
Nodding brome	BRAN	---	---	---	---	---	---	1-10
Slender hairgrass	DEEL	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	---	---	5-10
Tapertip hawksbeard	CRAC2	2-5	---	---	1-3	1-5	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	---	1-5	---	---
Geranium	GERAN	---	2-5	---	---	---	---	---
Groundsel	SENEC	---	2-5	---	---	---	---	---
Lupine	LUPIN	---	2-5	---	1-2	---	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	---	---	---	---	---	10-20
Mountain big sagebrush	ARTRV	5-15	5-10	---	5-15	5-15	---	---
Serviceberry	AMELA	---	5-10	---	---	---	---	---
Snowberry	SYMPH	---	2-10	---	2-5	---	---	2-5
Low sagebrush	ARAR8	---	---	5-15	---	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	---	---
Woods rose	ROWO	---	---	---	---	---	---	5-10
Common chokecherry	PRVI	---	---	---	---	---	---	5-10
Range site number		O24XO29N	O24XO32N	O24XO16N	O24XO23N	O24XO21N	None	O28BO25N
Potential production (lb/acre):								
Favorable years		1,500	2,200	350	1500	1,400	---	1,700
Normal years		1,100	1,700	250	1200	1,000	---	1,300
Unfavorable years		800	1,200	150	900	700	---	900

1423--Sumine-Chen-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Sumine	Chen	Rock outcrop	1	2	3
Bluebunch wheatgrass	AGSP	20-50	15-30	---	---	20-30	20-30
Basin wildrye	ELCI2	5-10	---	---	---	2-15	---
Mountain brome	BRMA4	2-15	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	2-10	---	---	2-10	15-25
Bottlebrush squirreltail	SIHY	2-5	---	---	---	---	---
Idaho fescue	FEID	1-10	25-50	---	---	20-40	---
Spike fescue	HEKI	---	2-10	---	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	---	---	10-15
Tapertip hawksbeard	CRAC2	2-5	---	---	---	1-5	2-5
Arrowleaf balsamroot	BASA3	2-5	---	---	---	1-5	2-5
Balsamroot	BALSA	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	---	---	---	---	2-5
Mountain big sagebrush	ARTRV	5-15	---	---	---	5-15	---
Low sagebrush	ARAR8	---	10-20	---	---	---	---
Douglas rabbitbrush	CHVI8	---	2-5	---	---	---	---
Big sagebrush	ARTR2	---	---	---	---	---	10-15
Range site number		O24XO29N	O24XO27N	None	None	O24XO21N	O25XO14N
Potential production (lb/acre):							
Favorable years		1,500	1,200	---	---	1,400	1,000
Normal years		1,100	800	---	---	1,000	800
Unfavorable years		800	600	---	---	700	600

1425--Sumine-Loncan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Sumine	Loncan	1	2	3
Bluebunch wheatgrass	AGSP	30-50	15-30	2-5	---	---
Basin wildrye	ELCI2	5-10	2-10	---	---	---
Idaho fescue	FEID	2-5	15-40	10-30	---	---
Nevada bluegrass	PONE3	2-5	2-5	---	---	---
Thurber needlegrass	STTH2	2-10	T-10	---	---	---
Bluegrass	POA++	---	---	5-15	---	---
Webber ricegrass	ORWE	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---
Other perennial grasses	PPGG	5-10	5-10	2-8	---	---
Arrowleaf balsamroot	BASA3	2-5	5-10	---	---	---
Tapertip hawksbeard	CRAC2	2-5	1-5	2-5	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---
Phlox	PHLOX	---	---	2-5	---	---
Other perennial forbs	PPFF	2-5	5-15	5-10	---	---
Antelope bitterbrush	PUTR2	2-15	5-15	---	---	---
Mountain big sagebrush	ARTRV	5-10	10-15	---	---	---
Low sagebrush	ARAR8	---	---	15-25	---	---
Black sagebrush	ARARN	---	---	15-25	---	---
Winterfat	EULA5	---	---	1-5	---	---
Other shrubs	SSSS	2-10	5-15	---	---	---
Range site number		025X009N	025X012N	025X024N	None	None
Potential production (lb/acre):						
Favorable years		1,300	1,200	350	---	---
Normal years		900	900	250	---	---
Unfavorable years		700	600	150	---	---

1426--Sumine-Cleavage-Loncan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Sumine	Cleavage	Loncan	1	2	3	4
Bluebunch wheatgrass	AGSP	30-50	2-5	15-30	15-30	---	15-25	---
Basin wildrye	ELCI2	5-10	---	2-10	---	---	2-5	5-15
Idaho fescue	FEID	2-5	10-30	5-40	30-50	---	15-30	---
Nevada bluegrass	PONE3	2-5	---	2-5	---	---	2-5	40-60
Thurber needlegrass	STTH2	2-10	---	T-10	---	---	2-5	---
Bluegrass	POA++	---	5-15	---	2-10	---	---	---
Webber ricegrass	ORWE	---	5-10	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	---	2-5	---	---	---
Alpine timothy	PHAL2	---	---	---	---	---	---	20-40
Sedge	CAREX	---	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	---	5-15
Meadow barley	HOBR2	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	5-10	2-8	5-10	5-15	---	5-15	2-8
Arrowleaf balsamroot	BASA3	2-5	---	5-10	---	---	---	---
Tapertip hawksbeard	CRAC2	2-5	2-5	1-5	---	---	---	---
Goldenweed	HAPLO2	---	2-5	---	---	---	---	---
Phlox	PHLOX	---	2-5	---	---	---	---	---
Balsamroot	BALSA	---	---	---	2-5	---	---	---
Sierra clover	TRWO	---	---	---	---	---	---	2-5
Cinquefoil	POTEN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	2-5	5-10	5-15	5-20	---	10-20	2-10
Antelope bitterbrush	PUTR2	2-15	---	5-15	0-10	---	20-40	---
Mountain big sagebrush	ARTRV	5-10	---	10-15	---	---	2-10	---
Low sagebrush	ARAR8	---	15-25	---	10-25	---	---	---
Black sagebrush	ARARN	---	15-25	---	---	---	---	---
Winterfat	EULA5	---	1-5	---	---	---	---	---
Snowberry	SYMPH	---	---	---	---	---	2-5	---
Serviceberry	AMELA	---	---	---	---	---	2-5	---
Willow	SALIX	---	---	---	---	---	---	2-5
Rose	ROSA+	---	---	---	---	---	---	2-5
Other shrubs	SSSS	2-10	---	5-15	5-15	---	2-8	2-5
Range site number		025X009N	025X024N	025X012N	025X017N	None	025X007N	025X006N
Potential production (lb/acre):								
Favorable years		1300	350	1,200	1,000	---	1,600	1,600
Normal years		900	250	900	700	---	1,300	1,300
Unfavorable years		700	150	600	400	---	800	800

1427--Sumine-Itca-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Sumine	Itca	Softscrabble	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	10-20	20-30	---	---	---	15-20
Basin wildrye	ELCI2	5-10	---	2-15	---	---	50-60	---
Mountain brome	BRMA4	2-15	---	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	---	2-10	---	---	---	15-20
Bottlebrush squirreltail	SIHY	2-5	---	---	---	---	---	---
Idaho fescue	FEID	1-10	15-25	20-40	---	---	---	---
Bluegrass	POA++	---	2-10	---	---	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-15	---
Mat muhly	MURI	---	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	---	1-5	---
Webber ricegrass	ORWE	---	---	---	---	---	---	5-10
Sandberg bluegrass	POSE	---	---	---	---	---	---	5-8
Pine bluegrass	POSC	---	---	---	---	---	---	5-8
Cusick bluegrass	POCU3	---	---	---	---	---	---	5-8
Other perennial grasses	PPGG	---	2-5	---	---	---	15-20	---
Tapertip hawksbeard	CRAC2	2-5	2-5	1-5	---	---	---	---
Arrowleaf balsamroot	BASA3	2-5	2-5	1-5	---	---	---	---
Balsamroot	BALSA	---	---	---	---	---	---	2-5
Eriogonum	ERIOG	---	---	---	---	---	---	1-3
Phlox	PHLOX	---	---	---	---	---	---	1-3
Other perennial forbs	PPFF	---	2-10	---	---	---	5-10	---
Mountain big sagebrush	ARTRV	5-15	---	5-15	---	---	---	---
Big sagebrush	ARTR2	---	5-10	---	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15	---
Low sagebrush	ARAR8	---	---	---	---	---	---	20-30
Other shrubs	SSSS	---	5-15	---	---	---	2-5	---
Singleleaf pinyon	PIMO	---	2-5	---	---	---	---	---
Range site number		024X029N	025X061N	024X021N	None	None	025X003N	024X018N
Potential production (lb/acre):								
Favorable years		1,500	500	1,400	---	---	2,500	700
Normal years		1,100	375	1,000	---	---	1,900	500
Unfavorable years		800	250	700	---	---	1,200	300

1428--Sumine-Rubble land-Cleavage association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Sumine	Rubble land	Cleavage	1	2	3
Bluebunch wheatgrass	AGSP	20-50	---	---	20-30	5-15	---
Basin wildrye	ELCI2	5-10	---	---	2-15	2-5	---
Mountain brome	BRMA4	2-15	---	---	---	5-10	---
Thurber needlegrass	STTH2	2-5	---	---	2-10	---	---
Bottlebrush squirreltail	SIHY	2-5	---	5-10	---	---	---
Idaho fescue	FEID	1-10	---	10-20	20-40	5-15	---
Webber ricegrass	ORWE	---	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	---	2-5	---	2-5	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---
Slender wheatgrass	AGTR	---	---	---	---	2-5	---
Bearded wheatgrass	AGSU	---	---	---	---	2-5	---
Letterman needlegrass	STLE4	---	---	---	---	2-5	---
Nevada bluegrass	PONE3	---	---	---	---	2-5	---
Tapertip hawksbeard	CRAC2	2-5	---	---	1-5	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	1-5	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---
Other perennial forbs	PPFF	---	---	---	---	5-15	---
Mountain big sagebrush	ARTRV	5-15	---	---	5-15	5-10	---
Low sagebrush	ARAR8	---	---	5-15	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	---
Serviceberry	AMELA	---	---	---	---	5-10	---
Oceanspray	HOLOD	---	---	---	---	5-10	---
Snowberry	SYMPH	---	---	---	---	2-10	---
Threetip sagebrush	ARTR4	---	---	---	---	2-10	---
Currant	RIBES	---	---	---	---	2-5	---
Range site number		O24XO29N	None	O24XO16N	O24XO21N	O24XO34N	None
Potential production (lb/acre):							
Favorable years		1,500	---	350	1,400	1,600	---
Normal years		1,100	---	250	1,000	1,300	---
Unfavorable years		800	---	150	700	800	---

1429--Sumine-Winada Variant-Pernty association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Sumine	Winada Variant	Pernty	1	2
Bluebunch wheatgrass	AGSP	20-50	5-10	20-30	---	---
Basin wildrye	ELCI2	5-10	---	2-15	---	---
Mountain brome	BRMA4	2-15	10-15	---	---	---
Thurber needlegrass	STTH2	2-5	---	2-10	---	---
Bottlebrush squirreltail	SIHY	2-5	---	---	5-10	---
Idaho fescue	FEID	1-10	5-15	20-40	10-20	---
Slender wheatgrass	AGTR	---	10-15	---	---	---
Bearded wheatgrass	AGSU	---	10-15	---	---	---
Spike fescue	HEKI	---	2-15	---	---	---
Bulbous oniongrass	MEBU	---	2-5	---	---	---
Nevada bluegrass	PONE3	---	2-5	---	---	---
Webber ricegrass	ORWE	---	---	---	5-10	---
Cusick bluegrass	POCU3	---	---	---	2-5	---
Sandberg bluegrass	POSE	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	2-5	---
Tapertip hawksbeard	CRAC2	2-5	---	1-5	---	---
Arrowleaf balsamroot	BASA3	2-5	---	1-5	---	---
Geranium	GERAN	---	2-5	---	---	---
Groundsel	SENEC	---	2-5	---	---	---
Lupine	LUPIN	---	2-5	---	---	---
Goldenweed	HAPLO2	---	---	---	2-5	---
Phlox	PHLOX	---	---	---	2-5	---
Mountain big sagebrush	ARTRV	5-15	5-10	5-15	---	---
Serviceberry	AMELA	---	5-10	---	---	---
Snowberry	SYMPH	---	2-10	---	---	---
Low sagebrush	ARAR8	---	---	---	5-15	---
Black sagebrush	ARARN	---	---	---	5-15	---
Range site number		024X029N	024X032N	024X021N	024X016N	None
Potential production (lb/acre):						
Favorable years		1,500	2,200	1,400	350	---
Normal years		1,100	1,700	1,000	250	---
Unfavorable years		800	1,200	700	150	---

1450--Atlow, steep-Atlow-Stingdorn association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Atlow, steep	Atlow	Stingdorn	1	2	3
Indian ricegrass	ORHY	10-15	10-15	5-15	---	10-15	5-15
Thurber needlegrass	STTH2	10-15	10-15	---	20-50	10-15	10-20
Bluegrass	POA++	2-10	2-10	---	---	2-10	---
Bottlebrush squirreltail	SIHY	---	---	5-15	---	---	2-10
Sandberg bluegrass	POSE	---	---	2-5	---	---	2-10
Needleandthread	STCO4	---	---	1-3	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	5-10	---	---
Other perennial grasses	PPGG	5-20	5-20	---	---	5-20	---
Globemallow	SPHAE	2-5	2-5	---	---	2-5	1-2
Balsamroot	BALSA	---	---	---	2-4	---	---
Tapertip hawksbeard	CRAC2	---	---	---	2-4	---	1-2
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	---	---	2-8	---	---	---
Black sagebrush	ARARN	25-35	25-35	---	---	25-35	---
Shadscale	ATCO	---	---	30-40	---	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---	---
Spiny hopsage	GRSP	---	---	2-5	2-5	---	5-15
Winterfat	EULA5	---	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	---	30-35
Downy rabbitbrush	CHVIP	---	---	---	2-5	---	---
Other shrubs	SSSS	5-35	5-35	---	2-10	5-35	---
Range site number		O24XO30N	O24XO30N	O24XO02N	O24XO05N	O24XO30N	O24XO20N
Potential production (lb/acre):							
Favorable years		500	500	700	800	500	700
Normal years		350	350	450	600	350	450
Unfavorable years		250	250	300	400	250	300

1451--Atlow-Reluctan-Trunk association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Atlow	Reluctan	Trunk	1	2	3
Indian ricegrass	ORHY	10-15	---	---	---	---	---
Thurber needlegrass	STTH2	10-15	2-10	20-50	5-10	15-25	---
Bluegrass	POA++	2-10	---	---	2-10	---	---
Idaho fescue	FEID	---	20-40	---	---	---	---
Bluebunch wheatgrass	AGSP	---	20-30	5-10	40-60	20-30	---
Basin wildrye	ELCI2	---	2-15	---	2-5	---	---
Nevada bluegrass	PONE3	---	---	---	---	2-10	---
Other perennial grasses	PPGG	5-20	---	---	---	10-15	---
Globemallow	SPHAE	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	1-5	2-4	2-5	2-5	---
Arrowleaf balsamroot	BASA3	---	1-5	---	2-5	2-5	---
Balsamroot	BALSA	---	---	2-4	---	---	---
Other perennial forbs	PPFF	---	---	---	---	2-5	---
Black sagebrush	ARARN	25-35	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	5-15	---	T-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	5-10	---	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	---	---
Spiny hopsage	GRSP	---	---	2-5	---	---	---
Big sagebrush	ARTR2	---	---	---	---	10-15	---
Other shrubs	SSSS	5-35	---	2-10	---	5-10	---
Range site number		024X030N	024X021N	024X005N	024X028N	025X014N	None
Potential production (lb/acre):							
Favorable years		500	1,400	800	1,000	1,000	---
Normal years		350	1,000	600	700	800	---
Unfavorable years		250	700	400	500	600	---

1452--Atlow-Minat-Old Camp association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Atlow	Minat	Old Camp	1	2
Indian ricegrass	ORHY	10-15	---	5-15	---	---
Thurber needlegrass	STTH2	10-15	20-50	10-20	15-25	---
Bluegrass	POA++	2-10	---	---	---	---
Bluebunch wheatgrass	AGSP	---	5-10	2-10	20-30	---
Bottlebrush squirreltail	SIHY	---	---	2-10	---	---
Nevada bluegrass	PONE3	---	---	---	2-10	---
Other perennial grasses	PPGG	5-20	---	---	10-15	---
Globemallow	SPHAE	2-5	---	---	---	---
Balsamroot	BALSA	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	2-5	---
Arrowleaf balsamroot	BASA3	---	---	---	2-5	---
Other perennial forbs	PPFF	---	---	2-8	2-5	---
Black sagebrush	ARARN	25-35	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-25	---	---
Downy rabbitbrush	CHVIP	---	2-5	2-5	---	---
Spiny hopsage	GRSP	---	2-5	2-10	---	---
Epdedra	EPHED	---	---	2-10	---	---
Shadscale	ATCO	---	---	2-5	---	---
Big sagebrush	ARTR2	---	---	---	10-15	---
Other shrubs	SSSS	5-35	2-10	---	5-10	---
Range site number		024X030N	024X005N	024X047N	025X014N	None
Potential production (lb/acre):						
Favorable years		500	800	400	1,000	---
Normal years		350	600	300	800	---
Unfavorable years		250	400	150	600	---

1453--Atlow-Colbar-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Atlow	Colbar	Rock outcrop	1	2	3
Indian ricegrass	ORHY	10-15	---	---	10-15	5-15	---
Thurber needlegrass	STTH2	10-15	20-50	---	10-15	---	---
Bluegrass	POA++	2-10	---	---	2-10	---	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-15	---
Sandberg bluegrass	POSE	---	---	---	---	2-5	---
Needleandthread	STCO4	---	---	---	---	1-3	---
Basin wildrye	ELCI2	---	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	5-20	---	---	5-20	---	15-20
Globemallow	SPHAE	2-5	---	---	2-5	---	---
Balsamroot	BALSA	---	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	---	---
Other perennial forbs	PPFF	---	---	---	---	2-8	5-10
Black sagebrush	ARARN	25-35	---	---	25-35	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	---	---	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---	2-5	---
Shadscale	ATCO	---	---	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	---	---	20-30	---
Winterfat	EULA5	---	---	---	---	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Other shrubs	SSSS	5-35	2-10	---	5-35	---	2-5
Range site number		024X030N	024X005N	None	024X030N	024X002N	025X003N
Potential production (lb/acre):							
Favorable years		500	800	---	500	700	2,500
Normal years		350	600	---	350	450	1,900
Unfavorable years		250	400	---	250	300	1,200

1532--Cleavage-Rubble land-Bregar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Cleavage	Rubble land	Bregar	1	2
Bluebunch wheatgrass	AGSP	15-30	---	---	15-25	---
Idaho fescue	FEID	30-50	---	10-20	---	---
Bluegrass	POA++	2-10	---	---	---	---
Bottlebrush squirreltail	SIHY	2-5	---	5-10	---	---
Webber ricegrass	ORWE	---	---	5-10	---	---
Cusick bluegrass	POCU3	---	---	2-5	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	2-5	---	---
Thurber needlegrass	STTH2	---	---	---	15-25	---
Other perennial grasses	PPGG	5-15	---	---	10-20	---
Balsamroot	BALSA	2-5	---	---	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---
Phlox	PHLOX	---	---	2-5	2-5	---
Tapertip hawksbeard	CRAC2	---	---	---	2-5	---
Arrowleaf balsamroot	BASA3	---	---	---	2-5	---
Other perennial forbs	PPFF	5-20	---	---	5-15	---
Low sagebrush	ARAR8	10-25	---	5-15	---	---
Antelope bitterbrush	PUTR2	0-10	---	---	2-5	---
Black sagebrush	ARARN	---	---	5-15	---	---
Big sagebrush	ARTR2	---	---	---	5-10	---
Other shrubs	SSSS	5-15	---	---	2-8	---
Range site number		025X017N	None	024X016N	025X021N	None
Potential production (lb/acre):						
Favorable years		1,000	---	350	500	---
Normal years		700	---	250	400	---
Unfavorable years		400	---	150	250	---

1542--Linrose-Cleavage-Pernty association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Linrose	Cleavage	Pernty	1	2	3	4
Idaho fescue	FEID	30-60	25-50	20-40	30-60	1-10	10-20	---
Cusick bluegrass	POCU3	5-10	---	---	5-10	---	2-5	---
Bluebunch wheatgrass	AGSP	2-10	15-30	20-30	5-10	20-50	---	---
Thurber needlegrass	STTH2	---	2-10	2-10	---	2-5	---	---
Spike fescue	HEKI	---	2-10	---	---	---	---	---
Basin wildrye	ELCI2	---	---	2-15	---	5-10	---	---
Mountain brome	BRMA4	---	---	---	2-5	2-15	---	---
Sedge	CAREX	---	---	---	2-5	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	2-5	5-10	---
Webber ricegrass	ORWE	---	---	---	---	---	5-10	---
Sandberg bluegrass	POSE	---	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	---	2-5	---
Tapertip hawksbeard	CRAC2	2-5	---	1-5	1-3	2-5	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Arrowleaf balsamroot	BASA3	---	---	1-5	---	2-5	---	---
Lupine	LUPIN	---	---	---	1-2	---	---	---
Goldenweed	HAPLO2	---	---	---	---	---	2-5	---
Phlox	PHLOX	---	---	---	---	---	2-5	---
Black sagebrush	ARARN	10-20	---	---	---	---	5-15	---
Low sagebrush	ARAR8	---	10-20	---	---	---	5-15	---
Douglas rabbitbrush	CHVI8	---	2-5	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	5-15	5-15	5-15	---	---
Snowberry	SYMPH	---	---	---	2-5	---	---	---
Range site number		024X042N	024X027N	024X021N	024X023N	024X029N	024X016N	None
Potential production (lb/acre):								
Favorable years		1000	1,200	1,400	1,500	1,500	350	---
Normal years		800	800	1,000	1,200	1,100	250	---
Unfavorable years		500	600	700	900	800	150	---

1570--Koynik Variant-Oxcorel-Whirlo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Koynik Variant	Oxcorel	Whirlo	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	2-10	---	---
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15	---	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-10	---	---
Needleandthread	STCO4	1-3	1-3	1-3	---	---	---	---
Thurber needlegrass	STTH2	---	---	---	10-20	10-20	---	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	1-2	---	---
Globemallow	SPHAE	---	---	---	1-2	1-2	---	---
Phlox	PHLOX	---	---	---	1-2	1-2	---	---
Other perennial forbs	PPFF	2-8	2-8	2-8	---	---	---	---
Shadscale	ATCO	30-40	30-40	30-40	---	---	---	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	5-15	---	---
Winterfat	EULA5	2-5	2-5	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	30-35	---	---
Range site number		024X002N	024X002N	024X002N	024X020N	024X020N	None	None
Potential production (lb/acre):								
Favorable years		700	700	700	700	700	---	---
Normal years		450	450	450	450	450	---	---
Unfavorable years		300	300	300	300	300	---	---

1662--Floer-Slaven-Roca association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Floer	Slaven	Roca	1	2	3
Idaho fescue	FEID	25-50	---	---	30-60	30-60	---
Bluebunch wheatgrass	AGSP	15-30	20-30	40-60	5-10	2-10	5-10
Thurber needlegrass	STTH2	2-10	15-25	5-10	---	---	20-50
Spike fescue	HEKI	2-10	---	---	---	---	---
Nevada bluegrass	PONE3	---	2-10	---	---	---	---
Bluegrass	POA++	---	---	2-10	---	---	---
Basin wildrye	ELCI2	---	---	2-5	---	---	---
Cusick bluegrass	POCU3	---	---	---	5-10	5-10	---
Mountain brome	BRMA4	---	---	---	2-5	---	---
Sedge	CAREX	---	---	---	2-5	---	---
Other perennial grasses	PPGG	---	10-15	---	---	---	---
Balsamroot	BALSA	2-5	---	---	---	---	2-4
Tapertip hawksbeard	CRAC2	---	2-5	2-5	1-3	2-5	2-4
Arrowleaf balsamroot	BASA3	---	2-5	2-5	---	---	---
Lupine	LUPIN	---	---	---	1-2	---	---
Other perennial forbs	PPFF	---	2-5	---	---	---	---
Low sagebrush	ARAR8	10-20	---	---	---	---	---
Douglas rabbitbrush	CHVI8	2-5	---	---	---	---	---
Big sagebrush	ARTR2	---	10-15	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	5-10	---	---	15-20
Mountain big sagebrush	ARTRV	---	---	T-5	5-15	---	---
Snowberry	SYMPH	---	---	---	2-5	---	---
Black sagebrush	ARARN	---	---	---	---	10-20	---
Downy rabbitbrush	CHVIP	---	---	---	---	---	2-5
Spiny hopsage	GRSP	---	---	---	---	---	2-5
Other shrubs	SSSS	---	5-10	---	---	---	2-10
Range site number		O24XO27N	O25XO14N	O24XO28N	O24XO23N	O24XO42N	O24XOO5N
Potential production (lb/acre):							
Favorable years		1,200	1,000	1,000	1,500	1,000	800
Normal years		800	800	700	1,200	800	600
Unfavorable years		600	600	500	900	500	400

1670--Wieland-Allor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Wieland	Allor	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	20-50	---	10-20
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	---	---
Basin wildrye	ELCI2	---	---	---	50-60	---
Nevada bluegrass	PONE3	---	---	---	5-15	---
Mat muhly	MURI	---	---	---	2-10	---
Sedge	CAREX	---	---	---	1-5	---
Indian ricegrass	ORHY	---	---	---	---	5-15
Bottlebrush squirreltail	SIHY	---	---	---	---	2-10
Sandberg bluegrass	POSE	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	15-20	---
Balsamroot	BALSA	2-4	2-4	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	---	1-2
Globemallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	---	---	---	5-10	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	30-35
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---	5-15
Basin big sagebrush	ARTRT*	---	---	---	10-15	---
Other shrubs	SSSS	2-10	2-10	2-10	2-5	---
Range site number		O24XO05N	O24XO05N	O24XO05N	O25XO03N	O24XO20N
Potential production (lb/acre):						
Favorable years		800	800	800	2,500	700
Normal years		600	600	600	1,900	450
Unfavorable years		400	400	400	1,200	300

1671--Wieland-Oxcorel-Allor association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Wieland	Oxcorel	Allor	1	2	3	4
Thurber needlegrass	STTH2	20-50	---	20-50	20-50	10-15	5-10	---
Bluebunch wheatgrass	AGSP	5-10	---	5-10	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	---	---	---	---	---
Indian ricegrass	ORHY	---	5-15	---	---	10-15	15-30	---
Sandberg bluegrass	POSE	---	2-5	---	---	---	---	---
Needleandthread	STCO4	---	1-3	---	---	---	---	---
Bluegrass	POA++	---	---	---	---	2-10	---	---
Galleta	HIJA	---	---	---	---	---	T-2	---
Basin wildrye	ELCI2	---	---	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	5-20	5-15	15-20
Balsamroot	BALSA	2-4	---	2-4	2-4	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	2-4	2-4	---	---	---
Globemallow	SPHAE	---	---	---	---	2-5	2-4	---
Other perennial forbs	PPFF	---	2-8	---	---	---	---	5-10
Wyoming big sagebrush	ARTRW*	15-20	---	15-20	15-20	---	15-30	---
Downy rabbitbrush	CHVIP	2-5	---	2-5	2-5	---	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	---	2-5	---
Shadscale	ATCO	---	30-40	---	---	---	2-5	---
Bud sagebrush	ARSP5	---	20-30	---	---	---	---	---
Winterfat	EULA5	---	2-5	---	---	---	---	---
Black sagebrush	ARARN	---	---	---	---	25-35	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	---	10-15
Other shrubs	SSSS	2-10	---	2-10	2-10	5-35	2-5	2-5
Range site number		O24XO05N	O24XO02N	O24XO05N	O24XO05N	O24XO30N	O24XO45N	O25XO03N
Potential production (lb/acre):								
Favorable years		800	700	800	800	500	350	2,500
Normal years		600	450	600	600	350	200	1,900
Unfavorable years		400	300	400	400	250	100	1,200

1673--Wieland-Grassval-Puett association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Wieland	Grassval	Puett	1	2	3
Thurber needlegrass	STTH2	20-50	10-15	---	20-50	X	---
Bluebunch wheatgrass	AGSP	5-10	---	---	5-10	X	---
Indian ricegrass	ORHY	---	10-15	10-30	---	---	---
Bluegrass	POA++	---	2-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---	---
Basin wildrye	ELCI2	---	---	---	---	X	50-60
Nevada bluegrass	PONE3	---	---	---	---	X	5-15
Idaho fescue	FEID	---	---	---	---	X	---
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	5-20	10-20	---	---	15-20
Balsamroot	BALSA	2-4	---	---	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	2-4	X	---
Globemallow	SPHAE	---	2-5	---	---	---	---
Arrowleaf balsamroot	BASA3	---	---	---	---	X	---
Other perennial forbs	PPFF	---	---	5-15	---	---	5-10
Wyoming big sagebrush	ARTRW*	15-20	---	10-25	15-20	---	---
Downy rabbitbrush	CHVIP	2-5	---	1-5	2-5	---	---
Spiny hopsage	GRSP	2-5	---	1-5	2-5	---	---
Black sagebrush	ARARN	---	25-35	5-15	---	---	---
Antelope bitterbrush	PUTR2	---	---	1-5	---	---	---
Purple sage	SACA9	---	---	T-5	---	---	---
Big sagebrush	ARTR2	---	---	---	---	X	---
Snowberry	SYMPH	---	---	---	---	X	---
Currant	RIBES	---	---	---	---	X	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Other shrubs	SSSS	2-10	5-35	2-4	2-10	---	2-5
Singleleaf pinyon	PIMO	---	---	---	---	X	---
Utah juniper	JUOS	---	---	---	---	X	---
Range site number		O24XO05N	O24XO30N	O25XO25N	O24XO05N	O25XO62N	O25XO03N
Potential production (lb/acre):							
Favorable years		800	500	200	800	500	2,500
Normal years		600	350	150	600	350	1,900
Unfavorable years		400	250	100	400	200	1,200

1680--Zineb gravelly loam, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Zineb	1	2
Thurber needlegrass	STTH2	20-50	---	20-50
Bluebunch wheatgrass	AGSP	5-10	---	5-10
Bottlebrush squirreltail	SIHY	---	5-15	---
Indian ricegrass	ORHY	---	5-15	---
Sandberg bluegrass	POSE	---	2-5	---
Needleandthread	STCO4	---	1-3	---
Balsamroot	BALSA	2-4	---	2-4
Tapertip hawksbeard	CRAC2	2-4	---	2-4
Other perennial forbs	PPFF	---	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	---	15-20
Downy rabbitbrush	CHVIP	2-5	---	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5
Shadscale	ATCO	---	30-40	---
Bud sagebrush	ARSP5	---	20-30	---
Winterfat	EULA5	---	2-5	---
Other shrubs	SSSS	2-10	---	2-10
Range site number		024X005N	024X002N	024X005N
Potential production (lb/acre):				
Favorable years		800	700	800
Normal years		600	450	600
Unfavorable years		400	300	400

1682--Zineb-Doowak-Oxcorel association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Zineb	Doowak	Oxcorel	1	2	3
Thurber needlegrass	STTH2	20-50	10-20	---	20-50	20-50	---
Bluebunch wheatgrass	AGSP	5-10	---	---	5-10	5-10	---
Indian ricegrass	ORHY	---	5-15	5-15	---	---	---
Bottlebrush squirreltail	SIHY	---	2-10	5-15	---	---	---
Sandberg bluegrass	POSE	---	2-10	2-5	---	---	---
Needleandthread	STCO4	---	---	1-3	---	---	---
Basin wildrye	ELCI2	---	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	---	15-20
Balsamroot	BALSA	2-4	---	---	2-4	2-4	---
Tapertip hawksbeard	CRAC2	2-4	1-2	---	2-4	2-4	---
Globemallow	SPHAE	---	1-2	---	---	---	---
Phlox	PHLOX	---	1-2	---	---	---	---
Other perennial forbs	PPFF	---	---	2-8	---	---	5-10
Wyoming big sagebrush	ARTRW*	15-20	30-35	---	15-20	15-20	---
Downy rabbitbrush	CHVIP	2-5	---	---	2-5	2-5	---
Spiny hopsage	GRSP	2-5	5-15	2-5	2-5	2-5	---
Shadscale	ATCO	---	---	30-40	---	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---	---
Winterfat	EULA5	---	---	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Other shrubs	SSSS	2-10	---	---	2-10	2-10	2-5
Range site number		O24XO05N	O24XO20N	O24XO02N	O24XO05N	O24XO05N	O25XO03N
Potential production (lb/acre):							
Favorable years		800	700	700	800	800	2,500
Normal years		600	450	450	600	600	1,900
Unfavorable years		400	300	300	400	400	1,200

2060--Oxcorel-Beoska-Whirlo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Oxcorel	Beoska	Whirlo	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	5-10	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	---	2-10
Needleandthread	STCO4	1-3	1-3	1-3	---	---	---
Thurber needlegrass	STTH2	---	---	---	10-20	---	10-20
Other perennial grasses	PPGG	---	---	---	---	T-10	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---	1-2
Globemallow	SPHAE	---	---	---	1-2	---	1-2
Phlox	PHLOX	---	---	---	1-2	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8	---
Shadscale	ATCO	30-40	30-40	30-40	---	30-50	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	5-15	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	---	5-15
Winterfat	EULA5	2-5	2-5	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	---	30-35
Black greasewood	SAVE4	---	---	---	---	15-30	---
Seepweed	SUAED	---	---	---	---	2-15	---
Range site number		024X002N	024X002N	024X002N	024X020N	024X003N	024X020N
Potential production (lb/acre):							
Favorable years		700	700	700	700	600	700
Normal years		450	450	450	450	450	450
Unfavorable years		300	300	300	300	300	300

2061--Oxcorel-Whirlo-Dun Glen association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name			Inclusion number--
		Oxcorel	Whirlo	Dun Glen	1
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5
Range site number		024X002N	024X002N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

2062--Oxcorel-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Oxcorel	Orovada	1	2
Bottlebrush squirreltail	SIHY	5-15	2-10	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-10	2-10	2-5
Needleandthread	STCO4	1-3	---	---	1-3
Thurber needlegrass	STTH2	---	10-20	10-20	---
Tapertip hawksbeard	CRAC2	---	1-2	1-2	---
Globemallow	SPHAE	---	1-2	1-2	---
Phlox	PHLOX	---	1-2	1-2	---
Other perennial forbs	PPFF	2-8	---	---	2-8
Shadscale	ATCO	30-40	---	---	30-40
Bud sagebrush	ARSP5	20-30	---	---	20-30
Spiny hopsage	GRSP	2-5	5-15	5-15	2-5
Winterfat	EULA5	2-5	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	30-35	30-35	---
Range site number		O24XOO2N	O24XO2ON	O24XO2ON	O24XOO2N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

2064--Oxcorel-Misad association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Oxcorel	Misad	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-10	2-10
Needleandthread	STCO4	1-3	1-3	---	---
Thurber needlegrass	STTH2	---	---	10-20	10-20
Tapertip hawksbeard	CRAC2	---	---	1-2	1-2
Globemallow	SPHAE	---	---	1-2	1-2
Phlox	PHLOX	---	---	1-2	1-2
Other perennial forbs	PPFF	2-8	2-8	---	---
Shadscale	ATCO	30-40	30-40	---	---
Bud sagebrush	ARSP5	20-30	20-30	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15	5-15
Winterfat	EULA5	2-5	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	30-35	30-35
Range site number		024X002N	024X002N	024X020N	024X020N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

2065--Oxcorel-Oxcorel, moderately steep-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Oxcorel	Oxcorel, moderately steep	Pineval	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	---	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	2-5	2-10
Needleandthread	STCO4	1-3	1-3	---	1-3	---
Thurber needlegrass	STTH2	---	---	20-50	---	10-20
Bluebunch wheatgrass	AGSP	---	---	5-10	---	---
Balsamroot	BALSA	---	---	2-4	---	---
Tapertip hawksbeard	CRAC2	---	---	2-4	---	1-2
Globemallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	---	2-8	---
Shadscale	ATCO	30-40	30-40	---	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	---	20-30	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	30-35
Downy rabbitbrush	CHVIP	---	---	2-5	---	---
Other shrubs	SSSS	---	---	2-10	---	---
Range site number		O24XO02N	O24XO02N	O24XO05N	O24XO02N	O24XO20N
Potential production (lb/acre):						
Favorable years		700	700	800	700	700
Normal years		450	450	600	450	450
Unfavorable years		300	300	400	300	300

2066--Oxcorel-Broyles-Dun Glen association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Oxcorel	Broyles	Dun Glen	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-10	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-10	2-5
Needleandthread	STCO4	1-3	1-3	1-3	---	---	1-3
Thurber needlegrass	STTH2	---	---	---	---	10-20	---
Other perennial grasses	PPGG	---	---	---	T-10	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-50	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	5-15	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	---	5-15	2-5
Winterfat	EULA5	2-5	2-5	2-5	---	---	2-5
Black greasewood	SAVE4	---	---	---	15-30	---	---
Seepweed	SUAED	---	---	---	2-15	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35	---
Range site number		O24XOO2N	O24XOO2N	O24XOO2N	O24XOO3N	O24XO2ON	O24XOO2N
Potential production (lb/acre):							
Favorable years		700	700	700	600	700	750
Normal years		450	450	450	450	450	450
Unfavorable years		300	300	300	300	300	300

2067--Oxcorel-Colbar-Stingdorn association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Oxcorel	Colbar	Stingdorn	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	5-15	2-10	2-10	2-10
Indian ricegrass	ORHY	5-15	---	5-15	2-10	5-15	5-15
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	2-10	2-10
Needleandthread	STCO4	1-3	---	1-3	---	---	---
Thurber needlegrass	STTH2	---	20-50	---	2-5	10-20	10-20
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---	---
Webber ricegrass	ORWE	---	---	---	2-10	---	---
Desert needlegrass	STSP3	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---
Eriogonum	ERIOG	---	---	---	1-2	---	---
Balsamroot	BALSA	---	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	1-2	1-2
Hawksbeard	CREPI	---	---	---	1-2	---	---
Globemallow	SPHAE	---	---	---	---	1-2	1-2
Phlox	PHLOX	---	---	---	---	1-2	1-2
Other perennial forbs	PPFF	2-8	---	2-8	---	---	---
Shadscale	ATCO	30-40	---	30-40	10-25	---	---
Bud sagebrush	ARSP5	20-30	---	20-30	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	5-15	5-15
Winterfat	EULA5	2-5	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	10-25	30-35	30-35
Downy rabbitbrush	CHVIP	---	2-5	---	2-5	---	---
Other shrubs	SSSS	---	2-10	---	---	---	---
Range site number		024X002N	024X005N	024X002N	024X026N	024X020N	024X020N
Potential production (lb/acre):							
Favorable years		700	800	700	400	700	700
Normal years		450	600	450	300	450	450
Unfavorable years		300	400	300	200	300	300

2068--Oxcorel-Golconda-Whirlo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Oxcorel	Golconda	Whirlo	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15	2-10	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-10	2-10
Needleandthread	STCO4	1-3	1-3	1-3	1-3	---	---
Thurber needlegrass	STTH2	---	---	---	---	10-20	10-20
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2	1-2
Globemallow	SPHAE	---	---	---	---	1-2	1-2
Phlox	PHLOX	---	---	---	---	1-2	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	---	---
Shadscale	ATCO	30-40	30-40	30-40	30-40	---	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	5-15	5-15
Winterfat	EULA5	2-5	2-5	2-5	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35	30-35
Range site number		O24XOO2N	O24XOO2N	O24XOO2N	O24XOO2N	O24XO2ON	O24XO2ON
Potential production (lb/acre):							
Favorable years		700	700	700	700	700	700
Normal years		450	450	450	450	450	450
Unfavorable years		300	300	300	300	300	300

2069--Oxcorel-Rednik-Veta association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Oxcorel	Rednik	Veta	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	---	---	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	---	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	---	2-10	2-5
Needleandthread	STCO4	1-3	1-3	---	---	---	1-3
Thurber needlegrass	STTH2	---	---	20-50	20-50	10-20	---
Bluebunch wheatgrass	AGSP	---	---	5-10	5-10	---	---
Balsamroot	BALSA	---	---	2-4	2-4	---	---
Tapertip hawksbeard	CRAC2	---	---	2-4	2-4	1-2	---
Globemallow	SPHAE	---	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	---	---	---	2-8
Shadscale	ATCO	30-40	30-40	---	---	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	---	---	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	---	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	15-20	15-20	30-35	---
Downy rabbitbrush	CHVIP	---	---	2-5	2-5	---	---
Other shrubs	SSSS	---	---	2-10	2-10	---	---
Range site number		O24XO02N	O24XO02N	O24XO05N	O24XO05N	O24XO20N	O24XO02N
Potential production (lb/acre):							
Favorable years		700	700	800	800	700	700
Normal years		450	450	600	600	450	450
Unfavorable years		300	300	400	400	300	300

2090--Punchbowl-Robson-Reluctan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Punchbowl	Robson	Reluctan	1	2	3
Indian ricegrass	ORHY	10-15	---	---	---	---	---
Thurber needlegrass	STTH2	10-15	15-20	2-10	---	---	---
Bluegrass	POA++	2-10	---	---	---	---	---
Bluebunch wheatgrass	AGSP	---	15-20	20-30	2-10	---	---
Webber ricegrass	ORWE	---	5-10	---	---	5-10	---
Sandberg bluegrass	POSE	---	5-8	---	---	2-5	---
Pine bluegrass	POSC	---	5-8	---	---	2-5	---
Cusick bluegrass	POCU3	---	5-8	---	5-10	2-5	---
Idaho fescue	FEID	---	---	20-40	30-60	10-20	---
Basin wildrye	ELCI2	---	---	2-15	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10	---
Other perennial grasses	PPGG	5-20	---	---	---	---	---
Globemallow	SPHAE	2-5	---	---	---	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---
Eriogonum	ERIOG	---	1-3	---	---	---	---
Phlox	PHLOX	---	1-3	---	---	2-5	---
Tapertip hawksbeard	CRAC2	---	---	1-5	2-5	---	---
Arrowleaf balsamroot	BASA3	---	---	1-5	---	---	---
Goldenweed	HAPLO2	---	---	---	---	2-5	---
Black sagebrush	ARARN	25-35	---	---	10-20	5-15	---
Low sagebrush	ARAR8	---	20-30	---	---	5-15	---
Mountain big sagebrush	ARTRV	---	---	5-15	---	---	---
Other shrubs	SSSS	5-35	---	---	---	---	---
Range site number		024X030N	024X018N	024X021N	024X042N	024X016N	None
Potential production (lb/acre):							
Favorable years		500	700	1,400	1,000	350	---
Normal years		350	500	1,000	800	250	---
Unfavorable years		250	300	700	500	150	---

2091--Punchbowl-Teguro-Sumine association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Punchbowl	Teguro	Sumine	1	2	3	4
Indian ricegrass	ORHY	10-15	---	---	---	---	---	---
Thurber needlegrass	STTH2	10-15	X	2-5	---	---	---	---
Bluegrass	POA++	2-10	---	---	---	---	---	---
Bluebunch wheatgrass	AGSP	---	X	20-50	---	---	5-10	---
Basin wildrye	ELCI2	---	X	5-10	---	---	---	50-60
Nevada bluegrass	PONE3	---	X	---	---	---	---	5-15
Idaho fescue	FEID	---	X	1-10	---	---	30-60	---
Mountain brome	BRMA4	---	---	2-15	---	---	2-5	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	---	---
Cusick bluegrass	POCU3	---	---	---	---	---	5-10	---
Sedge	CAREX	---	---	---	---	---	2-5	1-5
Mat muhly	MURI	---	---	---	---	---	---	2-10
Other perennial grasses	PPGG	5-20	---	---	---	---	---	15-20
Globemallow	SPHAE	2-5	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	X	2-5	---	---	1-3	---
Arrowleaf balsamroot	BASA3	---	X	2-5	---	---	---	---
Lupine	LUPIN	---	---	---	---	---	1-2	---
Other perennial forbs	PPFF	---	---	---	---	---	---	5-10
Black sagebrush	ARARN	25-35	---	---	---	---	---	---
Big sagebrush	ARTR2	---	X	---	---	---	---	---
Snowberry	SYMPH	---	X	---	---	---	2-5	---
Currant	RIBES	---	X	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	5-15	---	---	5-15	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	---	10-15
Other shrubs	SSSS	5-35	---	---	---	---	---	2-5
Singleleaf pinyon	PIMO	---	X	---	---	---	---	---
Utah juniper	JUOS	---	X	---	---	---	---	---
Range site number		O24XO30N	O25XO62N	O24XO29N	None	None	O24XO23N	O25XO03N
Potential production (lb/acre):								
Favorable years		500	500	1,500	---	---	1,500	2,500
Normal years		350	350	1,100	---	---	1,200	1,900
Unfavorable years		250	200	800	---	---	900	1,200

2092--Punchbowl-Belate-Reluctan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Punchbowl	Belate	Reluctan	1	2	3	4
Indian ricegrass	ORHY	10-15	---	---	5-15	---	---	---
Thurber needlegrass	STTH2	10-15	2-10	2-10	---	---	---	---
Bluegrass	POA++	2-10	---	---	---	---	---	---
Idaho fescue	FEID	---	25-50	20-40	---	---	---	---
Bluebunch wheatgrass	AGSP	---	15-30	20-30	1-3	---	---	---
Spike fescue	HEKI	---	2-10	---	---	---	---	---
Basin wildrye	ELCI2	---	---	2-15	---	30-50	---	---
Needleandthread	STCO4	---	---	---	5-15	---	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	2-5	---	---
Western wheatgrass	AGSM	---	---	---	---	2-5	---	---
Other perennial grasses	PPGG	5-20	---	---	5-10	15-25	---	---
Globemallow	SPHAE	2-5	---	---	---	---	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	1-5	---	---	---	---
Arrowleaf balsamroot	BASA3	---	---	1-5	---	---	---	---
Other perennial forbs	PPFF	---	---	---	5-15	2-5	---	---
Black sagebrush	ARARN	25-35	---	---	20-25	---	---	---
Low sagebrush	ARAR8	---	10-20	---	---	---	---	---
Douglas rabbitbrush	CHVI8	---	2-5	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	5-15	---	---	---	---
Fourwing saltbush	ATCA2	---	---	---	2-5	---	---	---
Bud sagebrush	ARSP5	---	---	---	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10	---	---
Other shrubs	SSSS	5-35	---	---	10-20	5-10	---	---
Range site number		O24XO30N	O24XO27N	O24XO21N	O28BO16N	O28BO03N	None	None
Potential production (lb/acre):								
Favorable years		500	1,200	1,400	500	2,600	---	---
Normal years		350	800	1,000	250	1,250	---	---
Unfavorable years		250	600	700	150	800	---	---

2094--Punchbowl-Jung-Locane association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Punchbowl	Jung	Locane	1	2	3
Indian ricegrass	ORHY	10-15	5-15	20-30	---	20-30	5-15
Thurber needlegrass	STTH2	10-15	---	---	---	---	---
Bluegrass	POA++	2-10	---	---	---	---	---
Needleandthread	STCO4	---	5-15	10-20	---	10-20	5-10
Pine bluegrass	POSC	---	2-5	---	---	---	---
Bluebunch wheatgrass	AGSP	---	1-3	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	5-10	2-5
Sandberg bluegrass	POSE	---	---	2-5	---	2-5	---
Other perennial grasses	PPGG	5-20	5-10	---	---	---	5-10
Globemallow	SPHAE	2-5	---	---	---	---	---
Other perennial forbs	PPFF	---	5-15	2-5	---	2-5	5-10
Black sagebrush	ARARN	25-35	20-25	---	---	---	---
Fourwing saltbush	ATCA2	---	2-5	---	---	---	2-5
Bud sagebrush	ARSP5	---	2-5	---	---	---	5-10
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	15-20	---
Shadscale	ATCO	---	---	---	---	---	30-40
Winterfat	EULA5	---	---	---	---	---	2-5
Other shrubs	SSSS	5-35	10-20	5-15	---	5-15	5-15
Range site number		O24XO30N	O28BO16N	O28BO10N	None	O28BO10N	O28BO17N
Potential production (lb/acre):							
Favorable years		500	500	800	---	800	700
Normal years		350	250	600	---	600	500
Unfavorable years		250	150	400	---	400	250

2098--Punchbowl-Clanalpine-Sumine association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Punchbowl	Clanalpine	Sumine	1	2	3	4
Indian ricegrass	ORHY	10-15	---	---	---	---	5-15	---
Thurber needlegrass	STTH2	10-15	---	2-5	---	---	---	X
Bluegrass	POA++	2-10	2-10	---	---	---	---	---
Idaho fescue	FEID	---	15-25	1-10	---	---	---	X
Bluebunch wheatgrass	AGSP	---	10-20	20-50	---	---	1-3	X
Basin wildrye	ELCI2	---	---	5-10	---	---	---	X
Mountain brome	BRMA4	---	---	2-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	---	---
Needleandthread	STCO4	---	---	---	---	---	5-15	---
Pine bluegrass	POSC	---	---	---	---	---	2-5	---
Nevada bluegrass	PONE3	---	---	---	---	---	---	X
Other perennial grasses	PPGG	5-20	2-5	---	---	---	5-10	---
Globemallow	SPHAE	2-5	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-5	2-5	---	---	---	X
Arrowleaf balsamroot	BASA3	---	2-5	2-5	---	---	---	X
Other perennial forbs	PPFF	---	2-10	---	---	---	5-15	---
Black sagebrush	ARARN	25-35	---	---	---	---	20-25	---
Big sagebrush	ARTR2	---	5-10	---	---	---	---	X
Mountain big sagebrush	ARTRV	---	---	5-15	---	---	---	---
Fourwing saltbush	ATCA2	---	---	---	---	---	2-5	---
Bud sagebrush	ARSP5	---	---	---	---	---	2-5	---
Snowberry	SYMPH	---	---	---	---	---	---	X
Currant	RIBES	---	---	---	---	---	---	X
Other shrubs	SSSS	5-35	5-15	---	---	---	10-20	---
Singleleaf pinyon	PIMO	---	2-5	---	---	---	---	X
Utah juniper	JUOS	---	---	---	---	---	---	X
Range site number		O24XO30N	O25XO61N	O24XO29N	None	None	O28BO16N	O25XO62N
Potential production (lb/acre):								
Favorable years		500	500	1,500	---	---	500	500
Normal years		350	375	1,100	---	---	250	350
Unfavorable years		250	250	800	---	---	150	200

2099--Punchbowl-Roca-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Punchbowl	Roca	Rock outcrop	1	2	3	4
Indian ricegrass	ORHY	10-15	---	---	5-15	---	---	---
Thurber needlegrass	STTH2	10-15	5-10	---	---	15-25	2-10	---
Bluegrass	POA++	2-10	2-10	---	---	---	---	---
Bluebunch wheatgrass	AGSP	---	40-60	---	1-3	20-30	20-30	---
Basin wildrye	ELCI2	---	2-5	---	---	---	2-15	30-50
Needleandthread	STCO4	---	---	---	5-15	---	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	2-10	---	5-10
Idaho fescue	FEID	---	---	---	---	---	20-40	---
Western wheatgrass	AGSM	---	---	---	---	---	---	5-10
Other perennial grasses	PPGG	5-20	---	---	5-10	10-15	---	5-15
Globemallow	SPHAE	2-5	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-5	---	---	2-5	1-5	---
Arrowleaf balsamroot	BASA3	---	2-5	---	---	2-5	1-5	---
Other perennial forbs	PPFF	---	---	---	5-15	2-5	---	5-10
Black sagebrush	ARARN	25-35	---	---	20-25	---	---	---
Wyoming big sagebrush	ARTRW*	---	5-10	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	T-5	---	---	---	5-15	---
Fourwing saltbush	ATCA2	---	---	---	2-5	---	---	---
Bud sagebrush	ARSP5	---	---	---	2-5	---	---	---
Big sagebrush	ARTR2	---	---	---	---	10-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	---	5-10
Rubber rabbitbrush	CHNA2	---	---	---	---	---	---	2-5
Other shrubs	SSSS	5-35	---	---	10-20	5-10	---	5-10
Range site number		O24XO30N	O24XO28N	None	O28BO16N	O25XO14N	O24XO21N	O28BO24N
Potential production (lb/acre):								
Favorable years		500	1,000	---	500	1,000	1,400	2,800
Normal years		350	700	---	250	800	1,000	1,700
Unfavorable years		250	500	---	150	600	700	1,000

2100--Grassval-Grina-Unsel Variant association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Grassval	Grina	Unsel Variant	1	2	3	4
Indian ricegrass	ORHY	10-15	X	5-15	5-15	5-15	10-15	10-30
Thurber needlegrass	STTH2	10-15	X	---	---	10-20	10-15	---
Bluegrass	POA++	2-10	X	---	---	---	2-10	---
Bluebunch wheatgrass	AGSP	---	X	---	---	---	---	---
Basin wildrye	ELCI2	---	X	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-15	5-15	2-10	---	5-10
Sandberg bluegrass	POSE	---	---	2-5	2-5	2-10	---	---
Needleandthread	STCO4	---	---	1-3	1-3	---	---	---
Other perennial grasses	PPGG	5-20	---	---	---	---	5-20	10-20
Globemallow	SPHAE	2-5	---	---	---	1-2	2-5	---
Tapertip hawksbeard	CRAC2	---	X	---	---	1-2	---	---
Arrowleaf balsamroot	BASA3	---	X	---	---	---	---	---
Phlox	PHLOX	---	---	---	---	1-2	---	---
Other perennial forbs	PPFF	---	---	2-8	2-8	---	---	5-15
Black sagebrush	ARARN	25-35	---	---	---	---	25-35	5-15
Big sagebrush	ARTR2	---	X	---	---	---	---	---
Douglas rabbitbrush	CHVI8	---	X	---	---	---	---	---
Shadscale	ATCO	---	---	30-40	30-40	---	---	---
Bud sagebrush	ARSP5	---	---	20-30	20-30	---	---	---
Spiny hopsage	GRSP	---	---	2-5	2-5	5-15	---	1-5
Winterfat	EULA5	---	---	2-5	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	30-35	---	10-25
Downy rabbitbrush	CHVIP	---	---	---	---	---	---	1-5
Antelope bitterbrush	PUTR2	---	---	---	---	---	---	1-5
Purple sage	SACA9	---	---	---	---	---	---	T-5
Other shrubs	SSSS	5-35	---	---	---	---	5-35	2-4
Utah juniper	JUOS	---	X	---	---	---	---	---
Range site number		O24XO30N	O25XO59N	O24XOO2N	O24XOO2N	O24XO20N	O24XO30N	O25XO25N
Potential production (lb/acre):								
Favorable years		500	500	700	700	700	500	200
Normal years		350	350	450	450	450	350	150
Unfavorable years		250	200	300	300	300	250	100

2104--Grassval-Zineb-Izod association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Grassval	Zineb	Izod	1	2	3
Indian ricegrass	ORHY	10-15	---	10-15	10-15	---	---
Thurber needlegrass	STTH2	10-15	20-50	10-15	10-15	X	---
Bluegrass	POA++	2-10	---	2-10	2-10	---	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	X	---
Basin wildrye	ELCI2	---	---	---	---	X	50-60
Nevada bluegrass	PONE3	---	---	---	---	X	5-15
Idaho fescue	FEID	---	---	---	---	X	---
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	5-20	---	5-20	5-20	---	15-20
Globemallow	SPHAE	2-5	---	2-5	2-5	---	---
Balsamroot	BALSA	---	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	X	---
Arrowleaf balsamroot	BASA3	---	---	---	---	X	---
Other perennial forbs	PPFF	---		---	---	---	---
Black sagebrush	ARARN	25-35	---	25-35	25-35	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	---	---	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---	---	---
Big sagebrush	ARTR2	---	---	---	---	X	---
Snowberry	SYMPH	---	---	---	---	X	---
Currant	RIBES	---	---	---	---	X	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Other shrubs	SSSS	5-35	2-10	5-35	5-35	---	2-5
Singleleaf pinyon	PIMO	---	---	---	---	X	---
Utah juniper	JUOS	---	---	---	---	X	---
Range site number		O24XO30N	O24XO05N	O24XO30N	O24XO30N	O25XO62N	O25XO03N
Potential production (lb/acre):							
Favorable years		500	800	500	500	500	2,500
Normal years		350	600	350	350	350	1,900
Unfavorable years		250	400	250	250	200	1,200

2521--Stingdorn very cobbly loam, 4 to 30 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Stingdorn	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	---	---
Indian ricegrass	ORHY	5-15	---	---	---
Sandberg bluegrass	POSE	2-5	---	---	---
Needleandthread	STCO4	1-3	---	---	---
Thurber needlegrass	STTH2	---	20-50	20-50	---
Bluebunch wheatgrass	AGSP	---	5-10	5-10	---
Balsamroot	BALSA	---	2-4	2-4	---
Tapertip hawksbeard	CRAC2	---	2-4	2-4	---
Other perennial forbs	PPFF	2-8	---	---	---
Shadscale	ATCO	30-40	---	---	---
Bud sagebrush	ARSP5	20-30	---	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---
Winterfat	EULA5	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	15-20	---
Downy rabbitbrush	CHVIP	---	2-5	2-5	---
Other shrubs	SSSS	---	2-10	2-10	---
Range site number		024X002N	024X005N	024X005N	None
Potential production (lb/acre):					
Favorable years		700	800	800	---
Normal years		450	600	600	---
Unfavorable years		300	400	400	---

2522--Stingdorn-Stingdorn, steep-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Stingdorn	Stingdorn, steep	Colbar	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	---	5-15	---	---
Indian ricegrass	ORHY	5-15	5-15	---	5-15	---	---
Sandberg bluegrass	POSE	2-5	2-5	---	2-5	---	---
Needleandthread	STCO4	1-3	1-3	---	1-3	---	---
Thurber needlegrass	STTH2	---	---	20-50	---	20-50	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---	5-10	---
Balsamroot	BALSA	---	---	2-4	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	2-4	---	2-4	---
Other perennial forbs	PPFF	2-8	2-8	---	2-8	---	---
Shadscale	ATCO	30-40	30-40	---	30-40	---	---
Bud sagebrush	ARSP5	20-30	20-30	---	20-30	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	2-5	---
Winterfat	EULA5	2-5	2-5	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	2-5	---
Other shrubs	SSSS	---	---	2-10	---	2-10	---
Range site number		024X002N	024X002N	024X005N	024X002N	024X005N	None
Potential production (lb/acre):							
Favorable years		700	700	800	700	800	---
Normal years		450	450	600	450	600	---
Unfavorable years		300	300	400	300	400	---

2530--Perwick-Puett-Tulase association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Perwick	Puett	Tulase	1	2
Bluebunch wheatgrass	AGSP	X	X	5-10	5-10	---
Thurber needlegrass	STTH2	X	X	20-50	20-50	---
Indian ricegrass	ORHY	X	X	---	---	---
Bluegrass	POA++	X	X	---	---	---
Basin wildrye	ELCI2	X	X	---	---	---
Tapertip hawksbeard	CRAC2	X	X	2-4	2-4	---
Arrowleaf balsamroot	BASA3	X	X	---	---	---
Balsamroot	BALSA	---	---	2-4	2-4	---
Big sagebrush	ARTR2	X	X	---	---	---
Douglas rabbitbrush	CHVI8	X	X	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	15-20	---
Downy rabbitbrush	CHVIP	---	---	2-5	2-5	---
Spiny hopsage	GRSP	---	---	2-5	2-5	---
Other shrubs	SSSS	---	---	2-10	2-10	---
Utah juniper	JUOS	X	X	---	---	---
Range site number		025X059N	025X059N	024X005N	024X005N	None
Potential production (lb/acre):						
Favorable years		500	500	800	800	---
Normal years		350	350	600	600	---
Unfavorable years		200	200	400	400	---

2540--Buffaran-Wieland association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Buffaran	Wieland	1	2
Thurber needlegrass	STTH2	20-50	20-50	20-50	20-50
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	5-10
Balsamroot	BALSA	2-4	2-4	2-4	2-4
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	2-4
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	15-20
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	2-5
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5
Other shrubs	SSSS	2-10	2-10	2-10	2-10
Range site number		024X005N	024X005N	024X005N	024X005N
Potential production (lb/acre):					
Favorable years		800	800	800	800
Normal years		600	600	600	600
Unfavorable years		400	400	400	400

2541-Buffaran-Zoesta association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Buffaran	Zoesta	1	2	3
Thurber needlegrass	STTH2	20-50	15-20	15-25	---	15-25
Bluebunch wheatgrass	AGSP	5-10	15-20	15-25	---	20-30
Webber ricegrass	ORWE	---	5-10	---	---	---
Sandberg bluegrass	POSE	---	5-8	---	---	---
Pine bluegrass	POSC	---	5-8	---	---	---
Cusick bluegrass	POCU3	---	5-8	---	---	---
Basin wildrye	ELCI2	---	---	---	50-60	---
Nevada bluegrass	PONE3	---	---	---	5-15	2-10
Mat muhly	MURI	---	---	---	2-10	---
Sedge	CAREX	---	---	---	1-5	---
Other perennial grasses	PPGG	---	---	10-20	15-20	10-15
Balsamroot	BALSA	2-4	2-5	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	2-5	---	2-5
Eriogonum	ERIOG	---	1-3	---	---	---
Phlox	PHLOX	---	1-3	---	---	---
Arrowleaf balsamroot	BASA3	---	---	2-5	---	2-5
Other perennial forbs	PPFF	---	---	2-10	5-10	2-5
Wyoming big sagebrush	ARTRW*	15-20	---	5-10	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	---	---	---	---
Low sagebrush	ARAR8	---	20-30	---	---	---
Mountain big sagebrush	ARTRV	---	---	5-10	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---
Big sagebrush	ARTR2	---	---	---	---	10-15
Other shrubs	SSSS	2-10	---	2-10	2-5	5-10
Range site number		O24XO05N	O24XO18N	O24XO35N	O25XO03N	O25XO14N
Potential production (lb/acre):						
Favorable years		800	700	500	2,500	1,000
Normal years		600	500	400	1,900	800
Unfavorable years		400	300	250	1,200	600

2550--Laped-Old Camp-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Laped	Old Camp	Colbar	1	2
Bottlebrush squirreltail	SIHY	5-15	---	---	2-10	---
Indian ricegrass	ORHY	5-15	---	---	5-15	---
Sandberg bluegrass	POSE	2-5	---	---	2-10	---
Needleandthread	STCO4	1-3	---	---	---	---
Pine bluegrass	POSC	---	20-30	20-30	---	---
Thurber needlegrass	STTH2	---	5-10	5-10	10-20	---
Other perennial grasses	PPGG	---	5-15	5-15	---	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	5-10	5-10	---	---
Shadscale	ATCO	30-40	---	---	---	---
Bud sagebrush	ARSP5	20-30	---	---	---	---
Spiny hopsage	GRSP	2-5	5-15	5-15	5-15	---
Winterfat	EULA5	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	10-20	10-20	30-35	---
Nevada ephedra	EPNE	---	5-10	5-10	---	---
Other shrubs	SSSS	---	5-10	5-10	---	---
Range site number		024X002N	027X007N	027X007N	024X020N	None
Potential production (lb/acre):						
Favorable years		700	600	600	700	---
Normal years		450	450	450	450	---
Unfavorable years		300	300	300	300	---

2551--Laped-Colbar-Osoll association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Laped	Colbar	Osoll	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	5-15	2-10	---	5-15
Indian ricegrass	ORHY	5-15	---	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	---	2-5	2-10	---	2-5
Needleandthread	STCO4	1-3	---	1-3	---	---	1-3
Thurber needlegrass	STTH2	---	20-50	---	10-20	20-50	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	5-10	---
Balsamroot	BALSA	---	2-4	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	2-4	---	1-2	2-4	---
Globemallow	SPHAE	---	---	---	1-2	---	---
Phlox	PHLOX	---	---	---	1-2	---	---
Other perennial forbs	PPFF	2-8	---	2-8	---	---	2-8
Shadscale	ATCO	30-40	---	30-40	---	---	30-40
Bud sagebrush	ARSP5	20-30	---	20-30	---	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5	2-5
Winterfat	EULA5	2-5	---	2-5	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	15-20	---	30-35	15-20	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	2-5	---
Other shrubs	SSSS	---	2-10	---	---	2-10	---
Range site number		024X002N	024X005N	024X002N	024X020N	024X005N	024X002N
Potential production (lb/acre):							
Favorable years		700	800	700	700	800	700
Normal years		450	600	450	450	600	450
Unfavorable years		300	400	300	300	400	300

2552--Laped-Old Camp-Puett association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Laped	Old Camp	Puett	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	5-10	---	---	---
Indian ricegrass	ORHY	5-15	---	10-30	---	---	15-30
Sandberg bluegrass	POSE	2-5	---	---	---	---	---
Needleandthread	STCO4	1-3	---	---	---	---	---
Thurber needlegrass	STTH2	---	20-50	---	20-50	---	5-10
Bluebunch wheatgrass	AGSP	---	5-10	---	5-10	---	---
Galleta	HIJA	---	---	---	---	---	T-2
Other perennial grasses	PPGG	---	---	10-20	---	---	5-15
Balsamroot	BALSA	---	2-4	---	2-4	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	2-4	---	---
Globemallow	SPHAE	---	---	---	---	---	2-4
Other perennial forbs	PPFF	2-8	---	5-15	---	---	---
Shadscale	ATCO	30-40	---	---	---	---	2-5
Bud sagebrush	ARSP5	20-30	---	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	1-5	2-5	---	2-5
Winterfat	EULA5	2-5	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	10-25	15-20	---	15-30
Downy rabbitbrush	CHVIP	---	2-5	1-5	2-5	---	---
Antelope bitterbrush	PUTR2	---	---	1-5	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	---
Purple sage	SACA9	---	---	T-5	---	---	---
Other shrubs	SSSS	---	2-10	2-4	2-10	---	2-5
Range site number		024X002N	024X005N	025X025N	024X005N	None	024X045N
Potential production (lb/acre):							
Favorable years		700	800	200	800	---	350
Normal years		450	600	150	600	---	200
Unfavorable years		300	400	100	400	---	100

2553--Laped-Stingdorn-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Laped	Stingdorn	Colbar	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	---	---	---	5-15
Indian ricegrass	ORHY	5-15	5-15	---	---	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	---	---	2-5
Needleandthread	STCO4	1-3	1-3	---	---	---	1-3
Thurber needlegrass	STTH2	---	---	20-50	---	20-50	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---	5-10	---
Balsamroot	BALSA	---	---	2-4	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	2-4	---	2-4	---
Other perennial forbs	PPFF	2-8	2-8	---	---	---	2-8
Shadscale	ATCO	30-40	30-40	---	---	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	---	---	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	---	2-5	2-5
Winterfat	EULA5	2-5	2-5	---	---	---	2-5
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	2-5	---
Other shrubs	SSSS	---	---	2-10	---	2-10	---
Range site number		024X002N	024X002N	024X005N	None	024X005N	024X002N
Potential production (lb/acre):							
Favorable years		700	700	800	---	800	700
Normal years		450	450	600	---	600	450
Unfavorable years		300	300	400	---	400	300

2555--Laped-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Laped	Colbar	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	2-10	5-15	---
Indian ricegrass	ORHY	5-15	---	2-10	5-15	15-30
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	---
Needleandthread	STCO4	1-3	---	---	1-3	---
Thurber needlegrass	STTH2	---	20-50	2-5	---	5-10
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---
Webber ricegrass	ORWE	---	---	2-10	---	---
Desert needlegrass	STSP3	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	2-5	---	---
Galleta	HIJA	---	---	---	---	T-2
Other perennial grasses	PPGG	---	---	---	---	5-15
Eriogonum	ERIOG	---	---	1-2	---	---
Balsamroot	BALSA	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	---
Hawksbeard	CREPI	---	---	1-2	---	---
Globemallow	SPHAE	---	---	---	---	2-4
Other perennial forbs	PPFF	2-8	---	---	2-8	---
Shadscale	ATCO	30-40	---	10-25	30-40	2-5
Bud sagebrush	ARSP5	20-30	---	2-5	20-30	---
Spiny hopsage	GRSP	2-5	2-5	5-15	2-5	2-5
Winterfat	EULA5	2-5	---	---	2-5	---
Wyoming big sagebrush	ARTRW*	---	15-20	10-25	---	15-30
Downy rabbitbrush	CHVIP	---	2-5	2-5	---	---
Other shrubs	SSSS	---	2-10	---	---	2-5
Range site number		O24XOO2N	O24XOO5N	O24XO26N	O24XOO2N	O24XO45N
Potential production (lb/acre):						
Favorable years		700	800	400	700	350
Normal years		450	600	300	450	200
Unfavorable years		300	400	200	300	100

2561--Puett-Genaw-Orovada association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Puett	Genaw	Orovada	1	2	3
Indian ricegrass	ORHY	10-30	20-30	20-30	10-15	5-15	---
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	---	5-15	---
Needleandthread	STCO4	---	10-20	10-20	---	1-3	---
Sandberg bluegrass	POSE	---	2-5	2-5	---	2-5	---
Thurber needlegrass	STTH2	---	---	---	10-15	---	---
Bluegrass	POA++	---	---	---	2-10	---	---
Other perennial grasses	PPGG	10-20	---	---	5-20	---	---
Globemallow	SPHAE	---	---	---	2-5	---	---
Other perennial forbs	PPFF	5-15	2-5	2-5	---	2-8	---
Downy rabbitbrush	CHVIP	1-5	---	---	---	---	---
Spiny hopsage	GRSP	1-5	---	---	---	2-5	---
Antelope bitterbrush	PUTR2	1-5	---	---	---	---	---
Black sagebrush	ARARN	5-15	---	---	25-35	---	---
Purple sage	SACA9	T-5	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	10-25	15-20	15-20	---	---	---
Shadscale	ATCO	---	---	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	---	---	20-30	---
Winterfat	EULA5	---	---	---	---	2-5	---
Other shrubs	SSSS	2-4	5-15	5-15	5-35	---	---
Range site number		025X025N	028B010N	028B010N	024X030N	024X002N	None
Potential production (lb/acre):							
Favorable years		200	800	800	500	700	---
Normal years		150	600	600	350	450	---
Unfavorable years		100	400	400	250	300	---

2571--Colbar, steep-Burrita-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Colbar, steep	Burrita	Colbar	1	2	3	4
Thurber needlegrass	STTH2	20-50	20-50	20-50	---	20-50	10-15	---
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-15	---	---	---
Indian ricegrass	ORHY	---	---	---	5-15	---	10-15	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---	---
Needleandthread	STCO4	---	---	---	1-3	---	---	---
Bluegrass	POA++	---	---	---	---	---	2-10	---
Other perennial grasses	PPGG	---	---	---	---	---	5-20	---
Balsamroot	BALSA	2-4	2-4	2-4	---	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	---	2-4	---	---
Globemallow	SPHAE	---	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	---	---	2-8	---	---	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	15-20	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	2-5	---	---
Shadscale	ATCO	---	---	---	30-40	---	---	---
Bud sagebrush	ARSP5	---	---	---	20-30	---	---	---
Winterfat	EULA5	---	---	---	2-5	---	---	---
Black sagebrush	ARARN	---	---	---	---	---	25-35	---
Other shrubs	SSSS	2-10	2-10	2-10	---	2-10	5-35	---
Range site number		O24XO05N	O24XO05N	O24XO05N	O24XO02N	O24XO05N	O24XO30N	None
Potential production (lb/acre):								
Favorable years		800	800	800	700	800	500	---
Normal years		600	600	600	450	600	350	---
Unfavorable years		400	400	400	300	400	250	---

2573--Colbar-Midraw association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Colbar	Midraw	1	2	3
Thurber needlegrass	STTH2	20-50	5-10	10-20	20-50	---
Bluebunch wheatgrass	AGSP	5-10	40-60	---	5-10	---
Bluegrass	POA++	---	2-10	---	---	---
Basin wildrye	ELCI2	---	2-5	---	---	---
Indian ricegrass	ORHY	---	---	5-15	---	---
Bottlebrush squirreltail	SIHY	---	---	2-10	---	---
Sandberg bluegrass	POSE	---	---	2-10	---	---
Balsamroot	BALSA	2-4	---	---	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-5	1-2	2-4	---
Arrowleaf balsamroot	BASA3	---	2-5	---	---	---
Globemallow	SPHAE	---	---	1-2	---	---
Phlox	PHLOX	---	---	1-2	---	---
Wyoming big sagebrush	ARTRW*	15-20	5-10	30-35	15-20	---
Downy rabbitbrush	CHVIP	2-5	---	---	2-5	---
Spiny hopsage	GRSP	2-5	---	5-15	2-5	---
Mountain big sagebrush	ARTRV	---	T-5	---	---	---
Other shrubs	SSSS	2-10	---	---	2-10	---
Range site number		O24X005N	O24X028N	O24X020N	O24X005N	None
Potential production (lb/acre):						
Favorable years		800	1,000	700	800	---
Normal years		600	700	450	600	---
Unfavorable years		400	500	300	400	---

2575--Colbar-Perwick-Settlemeyer association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Colbar	Perwick	Settlemeyer	1	2	3
Thurber needlegrass	STTH2	20-50	15-25	---	20-50	20-50	---
Bluebunch wheatgrass	AGSP	5-10	15-25	---	5-10	5-10	---
Basin wildrye	ELCI2	---	---	50-60	---	---	---
Nevada bluegrass	PONE3	---	---	5-15	---	---	---
Mat muhly	MURI	---	---	2-10	---	---	---
Sedge	CAREX	---	---	1-5	---	---	---
Other perennial grasses	PPGG	---	10-20	15-20	---	---	---
Balsamroot	BALSA	2-4	---	---	2-4	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-5	---	2-4	2-4	---
Arrowleaf balsamroot	BASA3	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	2-10	5-10	---	---	---
Wyoming big sagebrush	ARTRW*	15-20	5-10	---	15-20	15-20	---
Downy rabbitbrush	CHVIP	2-5	---	---	2-5	2-5	---
Spiny hopsage	GRSP	2-5	---	---	2-5	2-5	---
Mountain big sagebrush	ARTRV	---	5-10	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	10-15	---	---	---
Other shrubs	SSSS	2-10	2-10	2-5	2-10	2-10	---
Range site number		024X005N	024X035N	025X003N	024X005N	024X005N	None
Potential production (lb/acre):							
Favorable years		800	500	2,500	800	800	---
Normal years		600	400	1,900	600	600	---
Unfavorable years		400	250	1,200	400	400	---

2591--Osoll Variant-Oxcorel association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Osoll Variant	Oxcorel	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	---	2-10	2-10	---
Indian ricegrass	ORHY	5-15	5-15	---	5-15	5-15	---
Sandberg bluegrass	POSE	2-5	2-5	---	2-10	2-5	---
Needleandthread	STCO4	1-3	1-3	---	---	---	---
Thurber needlegrass	STTH2	---	---	---	10-20	---	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---	---
Globemallow	SPHAE	---	---	---	1-2	1-4	---
Phlox	PHLOX	---	---	---	1-2	1-4	---
Other perennial forbs	PPFF	2-8	2-8	---	---	---	---
Shadscale	ATCO	30-40	30-40	---	---	2-5	---
Bud sagebrush	ARSP5	20-30	20-30	---	---	20-30	---
Spiny hopsage	GRSP	2-5	2-5	---	5-15	---	---
Winterfat	EULA5	2-5	2-5	---	---	20-40	---
Wyoming big sagebrush	ARTRW*	---	---	---	30-35	---	---
Range site number		024X002N	024X002N	None	024X020N	024X014N	None
Potential production (lb/acre):							
Favorable years		700	700	---	700	400	---
Normal years		450	450	---	450	300	---
Unfavorable years		300	300	---	300	200	---

2600--Grina-Caniwe-Handy association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Grina	Caniwe	Handy	1	2	3
Bluebunch wheatgrass	AGSP	X	20-30	20-30	X	X	---
Thurber needlegrass	STTH2	X	15-25	15-25	X	X	---
Indian ricegrass	ORHY	X	---	---	---	X	---
Bluegrass	POA++	X	---	---	---	X	---
Basin wildrye	ELCI2	X	---	---	X	X	50-60
Nevada bluegrass	PONE3	---	2-10	2-10	X	---	5-15
Idaho fescue	FEID	---	---	---	X	---	---
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	10-15	10-15	---	---	15-20
Tapertip hawksbeard	CRAC2	X	2-5	2-5	X	X	---
Arrowleaf balsamroot	BASA3	X	2-5	2-5	X	X	---
Other perennial forbs	PPFF	---	2-5	2-5	---	---	5-10
Big sagebrush	ARTR2	X	10-15	10-15	X	X	---
Douglas rabbitbrush	CHVI8	X	---	---	---	X	---
Snowberry	SYMPH	---	---	---	X	---	---
Currant	RIBES	---	---	---	X	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Other shrubs	SSSS	---	5-10	5-10	---	---	2-5
Utah juniper	JUOS	X	---	---	X	X	---
Singleleaf pinyon	PIMO	---	---	---	X	---	---
Range site number		025X059N	025X014N	025X014N	025X062N	025X059N	025X003N
Potential production (lb/acre):							
Favorable years		500	1,000	1,000	500	500	2,500
Normal years		350	800	800	350	350	1,900
Unfavorable years		200	600	600	200	200	1,200

2602--Grina-Grina, eroded-Caniwe association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Grina	Grina, eroded	Caniwe	1	2	3
Bluebunch wheatgrass	AGSP	X	X	20-30	X	X	20-30
Thurber needlegrass	STTH2	X	X	15-25	X	X	15-25
Indian ricegrass	ORHY	X	X	---	X	X	---
Bluegrass	POA++	X	X	---	X	X	---
Basin wildrye	ELCI2	X	X	---	X	X	---
Nevada bluegrass	PONE3	---	---	2-10	---	---	2-10
Other perennial grasses	PPGG	---	---	10-15	---	---	10-15
Tapertip hawksbeard	CRAC2	X	X	2-5	X	X	2-5
Arrowleaf balsamroot	BASA3	X	X	2-5	X	X	2-5
Other perennial forbs	PPFF	---	---	2-5	---	---	2-5
Big sagebrush	ARTR2	X	X	10-15	X	X	10-15
Douglas rabbitbrush	CHVI8	X	X	---	X	X	---
Other shrubs	SSSS	---	---	5-10	---	---	5-10
Utah juniper	JUOS	X	X	---	X	X	---
Range site number		025X059N	025X059N	025X014N	025X059N	025X059N	025X014N
Potential production (lb/acre):							
Favorable years		500	500	1,000	500	500	1,000
Normal years		350	350	800	350	350	800
Unfavorable years		200	200	600	200	200	600

2620--Handy-Caniwe-Zoesta association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Handy	Caniwe	Zoesta	1	2	3
Bluebunch wheatgrass	AGSP	20-30	20-30	15-20	---	15-20	X
Thurber needlegrass	STTH2	15-25	15-25	15-20	---	15-20	X
Nevada bluegrass	PONE3	2-10	2-10	---	5-15	---	X
Webber ricegrass	ORWE	---	---	5-10	---	5-10	---
Sandberg bluegrass	POSE	---	---	5-8	---	5-8	---
Pine bluegrass	POSC	---	---	5-8	---	5-8	---
Cusick bluegrass	POCU3	---	---	5-8	---	5-8	---
Basin wildrye	ELCI2	---	---	---	50-60	---	X
Mat muhly	MURI	---	---	---	2-10	---	---
Sedge	CAREX	---	---	---	1-5	---	---
Idaho fescue	FEID	---	---	---	---	---	X
Other perennial grasses	PPGG	10-15	10-15	---	15-20	---	---
Tapertip hawksbeard	CRAC2	2-5	2-5	---	---	---	X
Arrowleaf balsamroot	BASA3	2-5	2-5	---	---	---	X
Balsamroot	BALSA	---	---	2-5	---	2-5	---
Eriogonum	ERIOG	---	---	1-3	---	1-3	---
Phlox	PHLOX	---	---	1-3	---	1-3	---
Other perennial forbs	PPFF	2-5	2-5	---	5-10	---	---
Big sagebrush	ARTR2	10-15	10-15	---	---	---	X
Low sagebrush	ARAR8	---	---	20-30	---	20-30	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---	---
Snowberry	SYMPH	---	---	---	---	---	X
Currant	RIBES	---	---	---	---	---	X
Other shrubs	SSSS	5-10	5-10	---	2-5	---	---
Singleleaf pinyon	PIMO	---	---	---	---	---	X
Utah juniper	JUOS	---	---	---	---	---	X
Range site number		O25XO14N	O25XO14N	O24XO18N	O25XO03N	O24XO18N	O25XO62N
Potential production (lb/acre):							
Favorable years		1,000	1,000	700	2,500	700	500
Normal years		800	800	500	1,900	500	350
Unfavorable years		600	600	300	1,200	300	200

2621--Handy, gravelly-Handy-Zoesta association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Handy, gravelly	Handy	Zoesta	1	2	3	4
Bluebunch wheatgrass	AGSP	20-30	20-30	15-20	X	20-30	---	---
Thurber needlegrass	STTH2	15-25	15-25	15-20	X	2-10	5-10	---
Nevada bluegrass	PONE3	2-10	2-10	---	X	---	---	5-15
Webber ricegrass	ORWE	---	---	5-10	---	---	---	---
Sandberg bluegrass	POSE	---	---	5-8	---	---	---	---
Pine bluegrass	POSC	---	---	5-8	---	---	---	---
Cusick bluegrass	POCU3	---	---	5-8	---	---	---	---
Basin wildrye	ELCI2	---	---	---	X	2-15	---	50-60
Idaho fescue	FEID	---	---	---	X	20-40	---	---
Indian ricegrass	ORHY	---	---	---	---	---	15-30	---
Galleta	HIJA	---	---	---	---	---	T-2	---
Mat muhly	MURI	---	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	---	1-5
Other perennial grasses	PPGG	10-15	10-15	---	---	---	5-15	15-20
Tapertip hawksbeard	CRAC2	2-5	2-5	---	X	1-5	---	---
Arrowleaf balsamroot	BASA3	2-5	2-5	---	X	1-5	---	---
Balsamroot	BALSA	---	---	2-5	---	---	---	---
Eriogonum	ERIOG	---	---	1-3	---	---	---	---
Phlox	PHLOX	---	---	1-3	---	---	---	---
Globemallow	SPHAE	---	---	---	---	---	2-4	---
Other perennial forbs	PPFF	2-5	2-5	---	---	---	---	5-10
Big sagebrush	ARTR2	10-15	10-15	---	X	---	---	---
Low sagebrush	ARAR8	---	---	20-30	---	---	---	---
Snowberry	SYMPH	---	---	---	X	---	---	---
Currant	RIBES	---	---	---	X	---	---	---
Mountain big sagebrush	ARTRV	---	---	---	---	5-15	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	---	15-30	---
Spiny hopsage	GRSP	---	---	---	---	---	2-5	---
Shadscale	ATCO	---	---	---	---	---	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	---	10-15
Other shrubs	SSSS	5-10	5-10	---	---	---	2-5	2-5
Singleleaf pinyon	PIMO	---	---	---	X	---	---	---
Utah juniper	JUOS	---	---	---	X	---	---	---
Range site number		O25XO14N	O25XO14N	O24XO18N	O25XO62N	O24XO21N	O24XO45N	O25XO03N
Potential production (lb/acre):								
Favorable years		1,000	1,000	700	500	1,400	350	2,500
Normal years		800	800	500	350	1,000	200	1,900
Unfavorable years		600	600	300	200	700	100	1,200

2631--Midraw-Minat-Pineval association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Midraw	Minat	Pineval	1	2	3
Bluebunch wheatgrass	AGSP	40-60	5-10	5-10	---	2-10	---
Thurber needlegrass	STTH2	5-10	20-50	20-50	5-10	10-20	---
Bluegrass	POA++	2-10	---	---	---	---	---
Basin wildrye	ELCI2	2-5	---	---	---	---	50-60
Indian ricegrass	ORHY	---	---	---	15-30	5-10	---
Galleta	HIJA	---	---	---	T-2	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	2-10	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	5-15	---	15-20
Tapertip hawksbeard	CRAC2	2-5	2-4	2-4	---	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	---	---	---
Balsamroot	BALSA	---	2-4	2-4	---	---	---
Globemallow	SPHAE	---	---	---	2-4	---	---
Other perennial forbs	PPFF	---	---	---	---	2-8	5-10
Wyoming big sagebrush	ARTRW*	5-10	15-20	15-20	15-30	15-25	---
Mountain big sagebrush	ARTRV	T-5	---	---	---	---	---
Downy rabbitbrush	CHVIP	---	2-5	2-5	---	2-5	---
Spiny hopsage	GRSP	---	2-5	2-5	2-5	2-10	---
Shadscale	ATCO	---	---	---	2-5	2-5	---
Ephedra	EPHED	---	---	---	---	2-10	---
Basin big sagebrush	ARTRI*	---	---	---	---	---	10-15
Other shrubs	SSSS	---	2-10	2-10	2-5	---	2-5
Range site number		024X028N	024X005N	024X005N	024X045N	024X047N	025X003N
Potential production (lb/acre):							
Favorable years		1,000	800	800	350	400	2,500
Normal years		700	600	600	200	300	1,900
Unfavorable years		500	400	400	100	150	1,200

2640--Rasille-Kelk association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Rasille	Kelk	1	2	3
Indian ricegrass	ORHY	20-30	---	---	5-15	---
Needleandthread	STCO4	10-20	---	---	1-3	---
Bottlebrush squirreltail	SIHY	5-10	---	5-10	5-15	---
Sandberg bluegrass	POSE	2-5	---	---	2-5	---
Basin wildrye	ELCI2	---	50-60	---	---	40-60
Western wheatgrass	AGSM	---	5-15	---	---	---
Alkali sacaton	SPAI	---	---	---	---	15-30
Inland saltgrass	DIST	---	---	---	---	5-10
Other perennial grasses	PPGG	---	---	T-10	---	---
Perennial forbs	PPFF	2-5	2-8	2-8	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	---	---	---	---
Basin big sagebrush	ARTRT*	---	15-20	---	---	---
Black greasewood	SAVE4	---	2-10	15-30	---	5-15
Rubber rabbitbrush	CHNA2	---	2-5	---	---	1-2
Shadscale	ATCO	---	---	30-50	30-40	---
Bud sagebrush	ARSP5	---	---	5-15	20-30	---
Seepweed	SUAED	---	---	2-15	---	---
Spiny hopsage	GRSP	---	---	---	2-5	---
Winterfat	EULA5	---	---	---	2-5	---
Alkali rabbitbrush	CHAL9	---	---	---	---	1-2
Other shrubs	SSSS	5-15	---	---	---	---
Range site number		028B010N	024X006N	024X003N	024X002N	024X007N
Potential production (lb/acre):						
Favorable years		800	1,500	600	700	1,900
Normal years		600	1,100	450	450	1,400
Unfavorable years		400	600	300	300	800

2652--Malpais-Stingdorn association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Malpais	Stingdorn	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	---	---
Indian ricegrass	ORHY	5-15	5-15	5-15	---	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	---
Needleandthread	STCO4	1-3	1-3	1-3	---	---
Thurber needlegrass	STTH2	---	---	---	20-50	---
Bluebunch wheatgrass	AGSP	---	---	---	5-10	---
Balsamroot	BALSA	---	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	---	2-4	---
Other perennial forbs	PPFF	2-8	2-8	2-8	---	---
Shadscale	ATCO	30-40	30-40	30-40	---	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	---
Winterfat	EULA5	2-5	2-5	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	---	2-5	---
Other shrubs	SSSS	---	---	---	2-10	---
Range site number		024X002N	024X002N	024X002N	024X005N	None
Potential production (lb/acre):						
Favorable years		700	700	700	800	---
Normal years		450	450	450	600	---
Unfavorable years		300	300	300	400	---

2670--Zoesta Variant-Jung-McVegas association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Zoesta Variant	Jung	McVegas	1	2	3
Indian ricegrass	ORHY	10-15	10-15	5-15	---	---	---
Thurber needlegrass	STTH2	10-15	10-15	---	20-50	20-50	---
Bluegrass	POA++	2-10	2-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-15	---	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---
Needleandthread	STCO4	---	---	1-3	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	5-10	5-10	---
Other perennial grasses	PPGG	5-20	5-20	---	---	---	---
Globemallow	SPHAE	2-5	2-5	---	---	---	---
Balsamroot	BALSA	---	---	---	2-4	2-4	---
Tapertip hawksbeard	CRAC2	---	---	---	2-4	2-4	---
Other perennial forbs	PPFF	---	---	2-8	---	---	---
Black sagebrush	ARARN	25-35	25-35	---	---	---	---
Shadscale	ATCO	---	---	30-40	---	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---	---
Spiny hopsage	GRSP	---	---	2-5	2-5	2-5	---
Winterfat	EULA5	---	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	15-20	---
Downy rabbitbrush	CHVIP	---	---	---	2-5	2-5	---
Other shrubs	SSSS	5-35	5-35	---	2-10	2-10	---
Range site number		024X030N	024X030N	024X002N	024X005N	024X005N	None
Potential production (lb/acre):							
Favorable years		500	500	700	800	800	---
Normal years		350	350	450	600	600	---
Unfavorable years		250	250	300	400	400	---

2681--Tessfive-Puett-Grina association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Tessfive	Puett	Grina	1	2	3
Indian ricegrass	ORHY	10-15	10-30	X	20-30	5-15	5-15
Thurber needlegrass	STTH2	10-15	---	X	---	10-20	---
Bluegrass	POA++	2-10	---	X	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	5-10	2-10	5-15
Bluebunch wheatgrass	AGSP	---	---	X	---	---	---
Basin wildrye	ELCI2	---	---	X	---	---	---
Needleandthread	STCO4	---	---	---	10-20	---	1-3
Sandberg bluegrass	POSE	---	---	---	2-5	2-10	2-5
Other perennial grasses	PPGG	5-20	10-20	---	---	---	---
Globemallow	SPHAE	2-5	---	---	---	1-2	---
Tapertip hawksbeard	CRAC2	---	---	X	---	1-2	---
Arrowleaf balsamroot	BASA3	---	---	X	---	---	---
Phlox	PHLOX	---	---	---	---	1-2	---
Other perennial forbs	PPFF	---	5-15	---	2-5	---	2-8
Black sagebrush	ARARN	25-35	5-15	---	---	---	---
Downy rabbitbrush	CHVIP	---	1-5	---	---	---	---
Spiny hopsage	GRSP	---	1-5	---	---	5-15	2-5
Antelope bitterbrush	PUTR2	---	1-5	---	---	---	---
Purple sage	SACA9	---	T-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	10-25	---	15-20	30-35	---
Big sagebrush	ARTR2	---	---	X	---	---	---
Douglas rabbitbrush	CHVI8	---	---	X	---	---	---
Shadscale	ATCO	---	---	---	---	---	30-40
Bud sagebrush	ARSP5	---	---	---	---	---	20-30
Winterfat	EULA5	---	---	---	---	---	2-5
Other shrubs	SSSS	5-35	2-4	---	5-15	---	---
Utah juniper	JUOS	---	---	X	---	---	---
Range site number		024X030N	025X025N	025X059N	028B010N	024X020N	024X002N
Potential production (lb/acre):							
Favorable years		500	200	500	800	700	700
Normal years		350	150	350	600	450	450
Unfavorable years		250	100	200	400	300	300

2711--Burrita-Burnborough association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Burrita	Burnborough	1	2	3	4
Bluebunch wheatgrass	AGSP	40-60	20-30	40-60	5-10	5-10	---
Thurber needlegrass	STTH2	5-10	2-10	5-10	20-50	20-50	---
Bluegrass	POA++	2-10	---	2-10	---	---	---
Basin wildrye	ELCI2	2-5	2-15	2-5	---	---	---
Idaho fescue	FEID	---	20-40	---	---	---	---
Tapertip hawksbeard	CRAC2	2-5	1-5	2-5	2-4	2-4	---
Arrowleaf balsamroot	BASA3	2-5	1-5	2-5	---	---	---
Balsamroot	BALSA	---	---	---	2-4	2-4	---
Wyoming big sagebrush	ARTRW*	5-10	---	5-10	15-20	15-20	---
Mountain big sagebrush	ARTRV	T-5	5-15	T-5	---	---	---
Downy rabbitbrush	CHVIP	---	---	---	2-5	2-5	---
Spiny hopsage	GRSP	---	---	---	2-5	2-5	---
Other shrubs	SSSS	---	---	---	2-10	2-10	---
Range site number		024X028N	024X021N	024X028N	024X005N	024X005N	None
Potential production (lb/acre):							
Favorable years		1,000	1,400	1,000	800	800	---
Normal years		700	1,000	700	600	600	---
Unfavorable years		500	700	500	400	400	---

2712--Burrita-Alley-Newpass association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Burrita	Alley	Newpass	1	2	3	4
Bluebunch wheatgrass	AGSP	15-25	5-10	5-10	---	5-10	5-10	---
Thurber needlegrass	STTH2	15-25	20-50	20-50	---	20-50	20-50	---
Other perennial grasses	PPGG	10-20	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-5	2-4	2-4	---	2-4	2-4	---
Arrowleaf balsamroot	BASA3	2-5	---	---	---	---	---	---
Balsamroot	BALSA	---	2-4	2-4	---	2-4	2-4	---
Other perennial forbs	PPFF	2-10	---	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	5-10	15-20	15-20	---	15-20	15-20	---
Mountain big sagebrush	ARTRV	5-10	---	---	---	---	---	---
Downy rabbitbrush	CHVIP	---	2-5	2-5	---	2-5	2-5	---
Spiny hopsage	GRSP	---	2-5	2-5	---	2-5	2-5	---
Other shrubs	SSSS	2-10	2-10	2-10	---	2-10	2-10	---
Range site number		024X035N	024X005N	024X005N	None	024X005N	024X005N	None
Potential production (lb/acre):								
Favorable years		500	800	800	---	800	800	---
Normal years		400	600	600	---	600	600	---
Unfavorable years		250	400	400	---	400	400	---

2721--Burnborough-Sumine-Burrita association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Burnborough	Sumine	Burrita	1	2	3	4
Idaho fescue	FEID	20-40	1-10	---	---	---	X	---
Bluebunch wheatgrass	AGSP	20-30	20-50	5-10	---	---	X	---
Basin wildrye	ELCI2	2-15	5-10	---	---	---	X	---
Thurber needlegrass	STTH2	2-10	2-5	20-50	5-10	---	X	---
Mountain brome	BRMA4	---	2-15	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	---	---	---	---	---
Indian ricegrass	ORHY	---	---	---	15-30	---	---	---
Galleta	HIJA	---	---	---	T-2	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	---	X	---
Other perennial grasses	PPGG	---	---	---	5-15	---	---	---
Tapertip hawksbeard	CRAC2	1-5	2-5	2-4	---	---	X	---
Arrowleaf balsamroot	BASA3	1-5	2-5	---	---	---	X	---
Balsamroot	BALSA	---	---	2-4	---	---	---	---
Globemallow	SPHAE	---	---	---	2-4	---	---	---
Mountain big sagebrush	ARTRV	5-15	5-15	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	15-30	---	---	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	---	---	---
Spiny hopsage	GRSP	---	---	2-5	2-5	---	---	---
Shadscale	ATCO	---	---	---	2-5	---	---	---
Big sagebrush	ARTR2	---	---	---	---	---	X	---
Snowberry	SYMPH	---	---	---	---	---	X	---
Currant	RIBES	---	---	---	---	---	X	---
Other shrubs	SSSS	---	---	2-10	2-5	---	---	---
Singleleaf pinyon	PIMO	---	---	---	---	---	X	---
Utah juniper	JUOS	---	---	---	---	---	X	---
Range site number		024X021N	024X029N	024X005N	024X045N	None	025X062N	None
Potential production (lb/acre):								
Favorable years		1,400	1,500	800	350	---	500	---
Normal years		1,000	1,100	600	200	---	350	---
Unfavorable years		700	800	400	100	---	200	---

2760--Ginex-Burrita-Burrita, south aspect, association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Ginex	Burrita	Burrita, south aspect	1	2	3	4
Bluebunch wheatgrass	AGSP	X	5-10	40-60	5-10	---	---	---
Thurber needlegrass	STTH2	X	20-50	5-10	---	---	2-5	---
Indian ricegrass	ORHY	X	---	---	---	---	2-10	---
Bluegrass	POA++	X	---	2-10	---	---	---	---
Basin wildrye	ELCI2	X	---	2-5	---	50-60	---	---
Idaho fescue	FEID	---	---	---	30-60	---	---	---
Cusick bluegrass	POCU3	---	---	---	5-10	---	---	---
Mountain brome	BRMA4	---	---	---	2-5	---	---	---
Sedge	CAREX	---	---	---	2-5	1-5	---	---
Nevada bluegrass	PONE3	---	---	---	---	5-15	---	---
Mat muhly	MURI	---	---	---	---	2-10	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	2-10	---
Webber ricegrass	ORWE	---	---	---	---	---	2-10	---
Desert needlegrass	STSP3	---	---	---	---	---	2-5	---
Sandberg bluegrass	POSE	---	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	---	2-5	---
Other perennial grasses	PPGG	---	---	---	---	15-20	---	---
Eriogonum	ERIOG	---	---	---	---	---	1-2	---
Tapertip hawksbeard	CRAC2	X	2-4	2-5	1-3	---	---	---
Arrowleaf balsamroot	BASA3	X	---	2-5	---	---	---	---
Balsamroot	BALSA	---	2-4	---	---	---	---	---
Lupine	LUPIN	---	---	---	1-2	---	---	---
Hawksbeard	CREPI	---	---	---	---	---	1-2	---
Other perennial forbs	PPFF	---	---	---	---	5-10	---	---
Big sagebrush	ARTR2	X	---	---	---	---	---	---
Douglas rabbitbrush	CHVI8	X	---	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	5-10	---	---	10-25	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---	2-5	---
Spiny hopsage	GRSP	---	2-5	---	---	---	5-15	---
Mountain big sagebrush	ARTRV	---	---	T-5	5-15	---	---	---
Snowberry	SYMPH	---	---	---	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	10-15	---	---
Shadscale	ATCO	---	---	---	---	---	10-25	---
Bud sagebrush	ARSP5	---	---	---	---	---	2-5	---
Other shrubs	SSSS	---	2-10	---	---	2-5	---	---
Utah juniper	JUOS	X	---	---	---	---	---	---

Range site number	O25XO59N	O24XOO5N	O24XO28N	O24XO23N	O25XOO3N	O24XO26N	None
Potential production (lb/acre):							
Favorable years	500	800	1,000	1,500	2,500	400	---
Normal years	350	600	700	1,200	1,900	300	---
Unfavorable years	200	400	500	900	1,200	200	---

2771--Kram-Hopeka-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Kram	Hopeka	Rock outcrop	1	2	3
Bluebunch wheatgrass	AGSP	X	X	---	---	20-30	---
Indian ricegrass	ORHY	X	X	---	10-15	---	---
Thurber needlegrass	STTH2	X	X	---	10-15	2-10	---
Bluegrass	POA++	X	X	---	2-10	---	---
Idaho fescue	FEID	---	---	---	---	20-40	---
Basin wildrye	ELCI2	---	---	---	---	2-15	50-60
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	X	X	---	5-20	---	15-20
Tapertip hawksbeard	CRAC2	X	X	---	---	1-5	---
Arrowleaf balsamroot	BASA3	X	X	---	---	1-5	---
Globemallow	SPHAE	---	---	---	2-5	---	---
Other perennial forbs	PPFF	X	X	---	---	---	5-10
Black sagebrush	ARARN	X	X	---	25-35	---	---
Downy rabbitbrush	CHVIP	X	X	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	---	---	5-15	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Other shrubs	SSSS	X	X	---	5-35	---	2-5
Utah juniper	JUOS	X	X	---	---	---	---
Singleleaf pinyon	PIMO	X	X	---	---	---	---
Range site number		025X063N	025X063N	None	024X030N	024X021N	025X003N
Potential production (lb/acre):							
Favorable years		400	400	---	500	1,400	2,500
Normal years		250	250	---	350	1,000	1,900
Unfavorable years		150	150	---	250	700	1,200

2783--Desatoya, steep-Spike-Desatoya association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Desatoya, steep	Spike	Desatoya	1	2	3
Indian ricegrass	ORHY	10-15	15-30	10-15	20-30	---	20-30
Thurber needlegrass	STTH2	10-15	5-10	10-15	---	---	---
Bluegrass	POA++	2-10	---	2-10	---	---	---
Galleta	HIJA	---	T-2	---	---	---	---
Needleandthread	STCO4	---	---	---	10-20	---	10-20
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---	5-10
Sandberg bluegrass	POSE	---	---	---	2-5	---	2-5
Basin wildrye	ELCI2	---	---	---	---	30-50	---
Nevada bluegrass	PONE3	---	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	---	2-5	---
Other perennial grasses	PPGG	5-20	5-15	5-20	---	15-25	---
Globemallow	SPHAE	2-5	2-4	2-5	---	---	---
Other perennial forbs	PPFF	---	---	---	2-5	2-5	2-5
Black sagebrush	ARARN	25-35	---	25-35	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-30	---	15-20	---	15-20
Spiny hopsage	GRSP	---	2-5	---	---	---	---
Shadscale	ATCO	---	2-5	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10	---
Other shrubs	SSSS	5-35	2-5	5-35	5-15	5-10	5-15
Range site number		024X030N	024X045N	024X030N	028B010N	028B003N	028B010N
Potential production (lb/acre):							
Favorable years		500	350	500	800	2,600	800
Normal years		350	200	350	600	1,250	600
Unfavorable years		250	100	250	400	800	400

2790--Old Camp-Minat-Osoll association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Old Camp	Minat	Osoll	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	---	10-20	---	10-20
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-15	2-10	---	2-10
Indian ricegrass	ORHY	---	---	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	---	---	2-5	2-10	---	2-10
Needleandthread	STCO4	---	---	1-3	---	---	---
Balsamroot	BALSA	2-4	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	1-2	---	1-2
Globemallow	SPHAE	---	---	---	1-2	---	1-2
Phlox	PHLOX	---	---	---	1-2	---	1-2
Other perennial forbs	PPFF	---	---	2-8	---	---	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	30-35	---	30-35
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	---	5-15
Shadscale	ATCO	---	---	30-40	---	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---	---
Winterfat	EULA5	---	---	2-5	---	---	---
Other shrubs	SSSS	2-10	2-10	---	---	---	---
Range site number		O24XO05N	O24XO05N	O24XO02N	O24XO20N	None	O24XO20N
Potential production (lb/acre):							
Favorable years		800	800	700	700	---	700
Normal years		600	600	450	450	---	450
Unfavorable years		400	400	300	300	---	300

2791--Old Camp-Colbar-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Old Camp	Colbar	Rock outcrop	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	---	5-10	---	10-20
Bluebunch wheatgrass	AGSP	5-10	5-10	---	40-60	---	---
Bluegrass	POA++	---	---	---	2-10	---	---
Basin wildrye	ELCI2	---	---	---	2-5	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-15	2-10
Indian ricegrass	ORHY	---	---	---	---	5-15	5-15
Sandberg bluegrass	POSE	---	---	---	---	2-5	2-10
Needleandthread	STCO4	---	---	---	---	1-3	---
Balsamroot	BALSA	2-4	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	2-5	---	1-2
Arrowleaf balsamroot	BASA3	---	---	---	2-5	---	---
Globemallow	SPHAE	---	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	---	---	---	---	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	5-10	---	30-35
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	---	---	2-5	5-15
Mountain big sagebrush	ARTRV	---	---	---	T-5	---	---
Shadscale	ATCO	---	---	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	---	---	20-30	---
Winterfat	EULA5	---	---	---	---	2-5	---
Other shrubs	SSSS	2-10	2-10	---	---	---	---
Range site number		O24XO05N	O24XO05N	None	O24XO28N	O24XOO2N	O24XO20N
Potential production (lb/acre):							
Favorable years		800	800	---	1,000	700	700
Normal years		600	600	---	700	450	450
Unfavorable years		400	400	---	500	300	300

2793--Old Camp-Laped association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Old Camp	Laped	1	2	3	4
Thurber needlegrass	STTH2	20-50	---	2-5	20-50	10-20	---
Bluebunch wheatgrass	AGSP	5-10	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	5-15	2-10	---	2-10	---
Indian ricegrass	ORHY	---	5-15	2-10	---	5-15	---
Sandberg bluegrass	POSE	---	2-5	2-5	---	2-10	---
Needleandthread	STCO4	---	1-3	---	---	---	---
Webber ricegrass	ORWE	---	---	2-10	---	---	---
Desert needlegrass	STSP3	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---
Balsamroot	BALSA	2-4	---	---	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	2-4	1-2	---
Hawksbeard	CREPI	---	---	1-2	---	---	---
Globemallow	SPHAE	---	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	---	1-2	---
Eriogonum	ERIOG	---	---	1-2	---	---	---
Other perennial forbs	PPFF	---	2-8	---	---	---	---
Wyoming big sagebrush	ARTRW*	15-20	---	10-25	15-20	30-35	---
Downy rabbitbrush	CHVIP	2-5	---	2-5	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15	2-5	5-15	---
Shadscale	ATCO	---	30-40	10-25	---	---	---
Bud sagebrush	ARSP5	---	20-30	2-5	---	---	---
Winterfat	EULA5	---	2-5	---	---	---	---
Other shrubs	SSSS	2-10	---	---	2-10	---	---
Range site number		O24XO05N	O24XO02N	O24XO26N	O24XO05N	O24XO20N	None
Potential production (lb/acre):							
Favorable years		800	700	400	800	700	---
Normal years		600	450	300	600	450	---
Unfavorable years		400	300	200	400	300	---

2794--Old Camp-Kram Variant-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Old Camp	Kram Variant	Rock outcrop	1	2	3
Thurber needlegrass	STTH2	20-50	10-20	---	---	10-20	10-15
Bluebunch wheatgrass	AGSP	5-10	2-10	---	---	---	---
Indian ricegrass	ORHY	---	5-15	---	5-15	5-15	10-15
Bottlebrush squirreltail	SIHY	---	2-10	---	5-15	2-10	---
Sandberg bluegrass	POSE	---	---	---	2-5	2-10	---
Needleandthread	STCO4	---	---	---	1-3	---	---
Bluegrass	POA++	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	---	---	5-20
Balsamroot	BALSA	2-4	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	---	1-2	2-5
Phlox	PHLOX	---	---	---	---	1-2	---
Other perennial forbs	PPFF	---	2-8	---	2-8	---	---
Wyoming big sagebrush	ARTRW*	15-20	15-25	---	---	30-35	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	2-10	---	2-5	5-15	---
Ephedra	EPHED	---	2-10	---	---	---	---
Shadscale	ATCO	---	2-5	---	30-40	---	---
Bud sagebrush	ARSP5	---	---	---	20-30	---	---
Winterfat	EULA5	---	---	---	2-5	---	---
Black sagebrush	ARARN	---	---	---	---	---	25-35
Other shrubs	SSSS	2-10	---	---	---	---	5-35
Range site number		024X005N	024X047N	None	024X002N	024X020N	024X030N
Potential production (lb/acre):							
Favorable years		800	400	---	700	700	500
Normal years		600	300	---	450	450	350
Unfavorable years		400	150	---	300	300	250

2796--Old Camp-Osoll-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Old Camp	Osoll	Colbar	1	2	3
Thurber needlegrass	STTH2	20-50	---	20-50	---	---	10-15
Bluebunch wheatgrass	AGSP	5-10	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	---	5-15	5-15	---
Indian ricegrass	ORHY	---	5-15	---	5-15	5-15	10-15
Sandberg bluegrass	POSE	---	2-5	---	2-5	2-5	---
Needleandthread	STCO4	---	1-3	---	1-3	1-3	---
Bluegrass	POA++	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	---	---	5-20
Balsamroot	BALSA	2-4	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	2-4	---	---	---
Globemallow	SPHAE	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	2-8	---	2-8	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	---	15-20	---	---	---
Downy rabbitbrush	CHVIP	2-5	---	2-5	---	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	2-5	---
Shadscale	ATCO	---	30-40	---	30-40	30-40	---
Bud sagebrush	ARSP5	---	20-30	---	20-30	20-30	---
Winterfat	EULA5	---	2-5	---	2-5	2-5	---
Black sagebrush	ARARN	---	---	---	---	---	25-35
Other shrubs	SSSS	2-10	---	2-10	---	---	5-35
Range site number		024X005N	024X002N	024X005N	024X002N	024X002N	024X030N
Potential production (lb/acre):							
Favorable years		800	700	800	700	700	500
Normal years		600	450	600	450	450	350
Unfavorable years		400	300	400	300	300	250

2797--Old Camp, steep-Colbar-Old Camp association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Old Camp, steep	Colbar	Old Camp	1	2	3	4
Thurber needlegrass	STTH2	20-50	20-50	20-50	15-25	10-15	---	---
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	20-30	---	---	---
Nevada bluegrass	PONE3	---	---	---	2-10	---	---	---
Indian ricegrass	ORHY	---	---	---	---	10-15	5-15	---
Bluegrass	POA++	---	---	---	---	2-10	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	5-15	---
Sandberg bluegrass	POSE	---	---	---	---	---	2-5	---
Needleandthread	STCO4	---	---	---	---	---	1-3	---
Other perennial grasses	PPGG	---	---	---	10-15	5-20	---	---
Balsamroot	BALSA	2-4	2-4	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	2-5	---	---	---
Arrowleaf balsamroot	BASA3	---	---	---	2-5	---	---	---
Globemallow	SPHAE	---	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	---	---	2-5	---	2-8	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	15-20	---	---	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---	---	2-5	---
Big sagebrush	ARTR2	---	---	---	10-15	---	---	---
Black sagebrush	ARARN	---	---	---	---	25-35	---	---
Shadscale	ATCO	---	---	---	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	---	---	---	20-30	---
Winterfat	EULA5	---	---	---	---	---	2-5	---
Other shrubs	SSSS	2-10	2-10	2-10	5-10	5-35	---	---
Range site number		O24XO05N	O24XO05N	O24XO05N	O25XO14N	O24XO30N	O24XO02N	None
Potential production (lb/acre):								
Favorable years		800	800	800	1,000	500	700	---
Normal years		600	600	600	800	350	450	---
Unfavorable years		400	400	400	600	250	300	---

2798--Old Camp-Atlow-Osoll association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Old Camp	Atlow	Osoll	1	2	3	4
Thurber needlegrass	STTH2	20-50	10-15	---	10-15	5-10	15-25	---
Bluebunch wheatgrass	AGSP	5-10	---	---	---	---	20-30	---
Indian ricegrass	ORHY	---	10-15	5-15	10-15	15-30	---	---
Bluegrass	POA++	---	2-10	---	2-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-15	---	---	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---	---
Needleandthread	STCO4	---	---	1-3	---	---	---	---
Galleta	HIJA	---	---	---	---	T-2	---	---
Nevada bluegrass	PONE3	---	---	---	---	---	2-10	---
Other perennial grasses	PPGG	---	5-20	---	5-20	5-15	10-15	---
Balsamroot	BALSA	2-4	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	---	---	2-5	---
Globemallow	SPHAE	---	2-5	---	2-5	2-4	---	---
Arrowleaf balsamroot	BASA3	---	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	---	2-8	---	---	2-5	---
Wyoming big sagebrush	ARTRW*	15-20	---	---	---	15-30	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---	---	---
Spiny hopsage	GRSP	2-5	---	2-5	---	2-5	---	---
Black sagebrush	ARARN	---	25-35	---	25-35	---	---	---
Shadscale	ATCO	---	---	30-40	---	2-5	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---	---	---
Winterfat	EULA5	---	---	2-5	---	---	---	---
Big sagebrush	ARTR2	---	---	---	---	---	10-15	---
Other shrubs	SSSS	2-10	5-35	---	5-35	2-5	5-10	---
Range site number		024X005N	024X030N	024X002N	024X030N	024X045N	025X014N	None
Potential production (lb/acre):								
Favorable years		800	500	700	500	350	1,000	---
Normal years		600	350	450	350	200	800	---
Unfavorable years		400	250	300	250	100	600	---

2800--Old Camp-Walti-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Old Camp	Walti	Softscrabble	1	2	3	4
Bluebunch wheatgrass	AGSP	15-25	15-30	20-30	---	---	---	5-15
Thurber needlegrass	STTH2	15-25	2-10	2-10	---	---	---	---
Idaho fescue	FEID	---	25-50	20-40	10-20	---	---	5-15
Spike fescue	HEKI	---	2-10	---	---	---	---	---
Basin wildrye	ELCI2	---	---	2-15	---	---	---	2-5
Webber ricegrass	ORWE	---	---	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	---	---	2-5	---	---	2-5
Sandberg bluegrass	POSE	---	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---	---
Mountain brome	BRMA4	---	---	---	---	---	---	5-10
Slender wheatgrass	AGTR	---	---	---	---	---	---	2-5
Bearded wheatgrass	AGSU	---	---	---	---	---	---	2-5
Letterman needlegrass	STLE4	---	---	---	---	---	---	2-5
Nevada bluegrass	PONE3	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	10-20	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-5	---	1-5	---	---	---	---
Arrowleaf balsamroot	BASA3	2-5	---	1-5	---	---	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Goldenweed	HAPLO2	---	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	---	2-5	---	---	---
Other perennial forbs	PPFF	2-10	---	---	---	---	---	5-15
Wyoming big sagebrush	ARTRW*	5-10	---	---	---	---	---	---
Mountain big sagebrush	ARTRV	5-10	---	5-15	---	---	---	5-10
Low sagebrush	ARAR8	---	10-20	---	5-15	---	---	---
Douglas rabbitbrush	CHVI8	---	2-5	---	---	---	---	---
Black sagebrush	ARARN	---	---	---	5-15	---	---	---
Serviceberry	AMELA	---	---	---	---	---	---	5-10
Oceanspray	HOLOD	---	---	---	---	---	---	5-10
Snowberry	SYMPH	---	---	---	---	---	---	2-10
Threetip sagebrush	ARTR4	---	---	---	---	---	---	2-10
Currant	RIBES	---	---	---	---	---	---	2-5
Other shrubs	SSSS	2-10	---	---	---	---	---	---
Range site number		024X035N	024X027N	024X021N	024X016N	None	None	024X034N
Potential production (lb/acre):								
Favorable years		500	1,200	1,400	350	---	---	1,600
Normal years		400	800	1,000	250	---	---	1,300
Unfavorable years		250	600	700	150	---	---	800

2801--Old Camp-Rock outcrop-Colbar association, strongly sloping

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Old Camp	Rock outcrop	Colbar	1	2	3
Thurber needlegrass	STTH2	10-20	---	20-50	2-5	---	20-50
Indian ricegrass	ORHY	5-15	---	---	2-10	5-15	---
Bluebunch wheatgrass	AGSP	2-10	---	5-10	---	---	5-10
Bottlebrush squirreltail	SIHY	2-10	---	---	2-10	5-15	---
Webber ricegrass	ORWE	---	---	---	2-10	---	---
Desert needlegrass	STSP3	---	---	---	2-5	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	2-5	---
Pine bluegrass	POSC	---	---	---	2-5	---	---
Needleandthread	STCO4	---	---	---	---	1-3	---
Eriogonum	ERIOG	---	---	---	1-2	---	---
Balsamroot	BALSA	---	---	2-4	---	---	2-4
Tapertip hawksbeard	CRAC2	---	---	2-4	---	---	2-4
Hawksbeard	CREPI	---	---	---	1-2	---	---
Other perennial forbs	PPFF	2-8	---	---	---	2-8	---
Wyoming big sagebrush	ARTRW*	15-25	---	15-20	10-25	---	15-20
Ephedra	EPHED	2-10	---	---	---	---	---
Spiny hopsage	GRSP	2-10	---	2-5	5-15	2-5	2-5
Downy rabbitbrush	CHVIP	2-5	---	2-5	2-5	---	2-5
Shadscale	ATCO	2-5	---	---	10-25	30-40	---
Bud sagebrush	ARSP5	---	---	---	2-5	20-30	---
Winterfat	EULA5	---	---	---	---	2-5	---
Range site number		O24XO47N	None	O24XOO5N	O24XO26N	O24XOO2N	O24XOO5N
Potential production (lb/acre):							
Favorable years		400	---	800	400	700	800
Normal years		300	---	600	300	450	600
Unfavorable years		150	---	400	200	300	400

2802--Old Camp-Rock outcrop-Colbar association, steep

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Old Camp	Rock outcrop	Colbar	1	2	3
Thurber needlegrass	STTH2	10-20	---	20-50	2-5	---	---
Indian ricegrass	ORHY	5-15	---	---	2-10	---	---
Bluebunch wheatgrass	AGSP	2-10	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	2-10	---	---	2-10	---	5-10
Webber ricegrass	ORWE	---	---	---	2-10	---	---
Desert needlegrass	STSP3	---	---	---	2-5	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---
Other perennial grasses	PPGG	---	---	---	---	---	T-10
Eriogonum	ERIOG	---	---	---	1-2	---	---
Balsamroot	BALSA	---	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	---	2-4	---	---	---
Hawksbeard	CREPI	---	---	---	1-2	---	---
Other perennial forbs	PPFF	2-8	---	---	---	---	2-8
Wyoming big sagebrush	ARTRW*	15-25	---	15-20	10-25	---	---
Ephedra	EPHED	2-10	---	---	---	---	---
Spiny hopsage	GRSP	2-10	---	2-5	5-15	---	---
Downy rabbitbrush	CHVIP	2-5	---	2-5	2-5	---	---
Shadscale	ATCO	2-5	---	---	10-25	---	30-50
Bud sagebrush	ARSP5	---	---	---	2-5	---	5-15
Black greasewood	SAVE4	---	---	---	---	---	15-30
Seepweed	SUAED	---	---	---	---	---	2-15
Range site number		024X047N	None	024X005N	024X026N	None	024X003N
Potential production (lb/acre):							
Favorable years		400	---	800	400	---	600
Normal years		300	---	600	300	---	450
Unfavorable years		150	---	400	200	---	300

3071--Allor-Wieland association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Allor	Wieland	1	2	3
Indian ricegrass	ORHY	20-30	20-30	---	20-30	20-30
Needleandthread	STCO4	10-20	10-20	---	10-20	10-20
Bottlebrush squirreltail	SIHY	5-10	5-10	---	5-10	5-10
Sandberg bluegrass	POSE	2-5	2-5	---	2-5	2-5
Basin wildrye	ELCI2	---	---	30-50	---	---
Nevada bluegrass	PONE3	---	---	2-5	---	---
Western wheatgrass	AGSM	---	---	2-5	---	---
Other perennial grasses	PPGG	---	---	15-25	---	---
Perennial forbs	PPFF	2-5	2-5	2-5	2-5	2-5
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	15-20	15-20
Basin big sagebrush	ARTRT*	---	---	5-10	---	---
Other shrubs	SSSS	5-15	5-15	5-10	5-15	5-15
Range site number		O28BO10N	O28BO10N	O28BO03N	O28BO10N	O28BO10N
Potential production (lb/acre):						
Favorable years		800	800	2,600	800	800
Normal years		600	600	1,250	600	600
Unfavorable years		400	400	800	400	400

3111--Ninemile-Zoesta-Itca association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Ninemile	Zoesta	Itca	1	2	3
Bluebunch wheatgrass	AGSP	5-15	2-5	10-20	---	---	1-3
Pine bluegrass	POSC	5-10	---	---	---	---	2-5
Thurber needlegrass	STTH2	2-5	5-15	---	---	---	---
Indian ricegrass	ORHY	2-5	5-10	---	---	---	5-15
Bottlebrush squirreltail	SIHY	2-5	2-5	---	---	---	---
Sandberg bluegrass	POSE	---	5-10	---	---	---	---
Idaho fescue	FEID	---	---	15-25	---	---	---
Bluegrass	POA++	---	---	2-10	---	---	---
Basin wildrye	ELCI2	---	---	---	---	30-50	---
Nevada bluegrass	PONE3	---	---	---	---	2-5	---
Western wheatgrass	AGSM	---	---	---	---	2-5	---
Needleandthread	STCO4	---	---	---	---	---	5-15
Other perennial grasses	PPGG	10-15	---	2-5	---	15-25	5-10
Tapertip hawksbeard	CRAC2	---	---	2-5	---	---	---
Arrowleaf balsamroot	BASA3	---	---	2-5	---	---	---
Other perennial forbs	PPFF	10-15	5-10	2-10	---	2-5	5-15
Low sagebrush	ARAR8	25-30	25-30	---	---	---	---
Big sagebrush	ARTR2	---	---	5-10	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	5-10	---
Black sagebrush	ARARN	---	---	---	---	---	20-25
Fourwing saltbush	ATCA2	---	---	---	---	---	2-5
Bud sagebrush	ARSP5	---	---	---	---	---	2-5
Other shrubs	SSSS	10-20	10-15	5-15	---	5-10	10-20
Singleleaf pinyon	PIMO	---	---	2-5	---	---	---
Range site number		028B037N	028B045N	025X061N	None	028B003N	028B016N
Potential production (lb/acre):							
Favorable years		700	800	500	---	2,600	500
Normal years		500	600	375	---	1,250	250
Unfavorable years		300	400	250	---	800	150

3121--Walti-Softscrabble-Bucan association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Walti	Softscrabble	Bucan	1	2	3	4
Idaho fescue	FEID	25-50	20-40	---	---	---	X	---
Bluebunch wheatgrass	AGSP	15-30	20-30	40-60	---	---	---	---
Thurber needlegrass	STTH2	2-10	2-10	5-10	---	---	---	---
Spike fescue	HEKI	2-10	---	---	---	---	---	---
Basin wildrye	ELCI2	---	2-15	2-5	50-60	---	---	---
Bluegrass	POA++	---	---	2-10	---	---	---	---
Nevada bluegrass	PONE3	---	---	---	5-15	---	---	5-10
Mat muhly	MURI	---	---	---	2-10	---	---	---
Sedge	CAREX	---	---	---	1-5	---	---	5-10
Mountain brome	BRMA4	---	---	---	---	---	X	---
Slender wheatgrass	AGTR	---	---	---	---	---	X	---
Bulbous oniongrass	MEBU	---	---	---	---	---	X	---
Tufted hairgrass	DECA5	---	---	---	---	---	---	30-60
Alpine timothy	PHAL2	---	---	---	---	---	---	5-10
Meadow barley	HOBR2	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	15-20	---	X	2-10
Balsamroot	BALSA	2-5	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	1-5	2-5	---	---	---	---
Arrowleaf balsamroot	BASA3	---	1-5	2-5	---	---	---	---
Horsemint	AGUR	---	---	---	---	---	X	---
Columbine	AQUIL	---	---	---	---	---	X	---
Meadowrue	THALI2	---	---	---	---	---	X	---
Geranium	GERAN	---	---	---	---	---	X	---
Sweet cicely	OSMOR	---	---	---	---	---	X	---
Lupine	LUPIN	---	---	---	---	---	X	---
Sierra clover	TRWO	---	---	---	---	---	---	2-5
Cinquefoil	POTEN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	5-10	---	X	10-20
Low sagebrush	ARAR8	10-20	---	---	---	---	---	---
Douglas rabbitbrush	CHVI8	2-5	---	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	5-15	T-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	5-10	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---	---	---
Big sagebrush	ARTR2	---	---	---	---	---	X	---
Currant	RIBES	---	---	---	---	---	X	---
Snowberry	SYMPH	---	---	---	---	---	X	---
Willow	SALIX	---	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	2-5	---	X	2-5
Quaking aspen	POTR5	---	---	---	---	---	X	---
Range site number		024X027N	024X021N	024X028N	025X003N	None	025X065N	025X005N
Potential production (lb/acre):								
Favorable years		1,200	1,400	1,000	2,500	---	800	2,000
Normal years		800	1,000	700	1,900	---	600	1,700
Unfavorable years		600	700	500	1,200	---	400	1,000

3122--Walti-Sumine-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Walti	Sumine	Softscrabble	1	2	3	4
Idaho fescue	FEID	25-50	1-10	20-40	---	---	---	10-20
Bluebunch wheatgrass	AGSP	15-30	20-50	20-30	---	---	---	---
Thurber needlegrass	STTH2	2-10	2-5	2-10	---	---	---	---
Spike fescue	HEKI	2-10	---	---	---	---	---	---
Basin wildrye	ELCI2	---	5-10	2-15	50-60	---	---	---
Mountain brome	BRMA4	---	2-15	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	---	---	---	---	5-10
Nevada bluegrass	PONE3	---	---	---	5-15	---	---	---
Mat muhly	MURI	---	---	---	2-10	---	---	---
Sedge	CAREX	---	---	---	1-5	---	---	---
Webber ricegrass	ORWE	---	---	---	---	---	---	5-10
Cusick bluegrass	POCU3	---	---	---	---	---	---	2-5
Sandberg bluegrass	POSE	---	---	---	---	---	---	2-5
Pine bluegrass	POSC	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	15-20	---	---	---
Balsamroot	BALSA	2-5	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-5	1-5	---	---	---	---
Arrowleaf balsamroot	BASA3	---	2-5	1-5	---	---	---	---
Goldenweed	HAPLO2	---	---	---	---	---	---	2-5
Phlox	PHLOX	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	5-10	---	---	---
Low sagebrush	ARAR8	10-20	---	---	---	---	---	5-15
Douglas rabbitbrush	CHVI8	2-5	---	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	5-15	5-15	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---	---	---
Black sagebrush	ARARN	---	---	---	---	---	---	5-15
Other shrubs	SSSS	---	---	---	2-5	---	---	---
Range site number		024X027N	024X029N	024X021N	025X003N	None	None	024X016N
Potential production (lb/acre):								
Favorable years		1,200	1,500	1,400	2,500	---	---	350
Normal years		800	1,100	1,000	1,900	---	---	250
Unfavorable years		600	800	700	1,200	---	---	150

3127--Walti-Cleavage-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Walti	Cleavage	Softscrabble	1	2	3	4
Idaho fescue	FEID	25-50	10-20	20-40	---	---	15-25	---
Bluebunch wheatgrass	AGSP	15-30	---	20-30	20-30	---	10-20	---
Thurber needlegrass	STTH2	2-10	---	2-10	15-25	---	---	---
Spike fescue	HEKI	2-10	---	---	---	---	---	---
Webber ricegrass	ORWE	---	5-10	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	---	---	---	---
Cusick bluegrass	POCU3	---	2-5	---	---	---	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	---	---	---
Pine bluegrass	POSC	---	2-5	---	---	---	---	---
Basin wildrye	ELCI2	---	---	2-15	---	50-60	---	---
Nevada bluegrass	PONE3	---	---	---	2-10	5-15	---	---
Mat muhly	MURI	---	---	---	---	2-10	---	---
Sedge	CAREX	---	---	---	---	1-5	---	---
Bluegrass	POA++	---	---	---	---	---	2-10	---
Other perennial grasses	PPGG	---	---	---	10-15	15-20	2-5	---
Balsamroot	BALSA	2-5	---	---	---	---	---	---
Goldenweed	HAPLO2	---	2-5	---	---	---	---	---
Phlox	PHLOX	---	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	1-5	2-5	---	2-5	---
Arrowleaf balsamroot	BASA3	---	---	1-5	2-5	---	2-5	---
Other perennial forbs	PPFF	---	---	---	2-5	5-10	2-10	---
Low sagebrush	ARAR8	10-20	5-15	---	---	---	---	---
Douglas rabbitbrush	CHVI8	2-5	---	---	---	---	---	---
Black sagebrush	ARARN	---	5-15	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	5-15	---	---	---	---
Big sagebrush	ARTR2	---	---	---	10-15	---	5-10	---
Basin big sagebrush	ARTRT*	---	---	---	---	10-15	---	---
Other shrubs	SSSS	---	---	---	5-10	2-5	5-15	---
Singleleaf pinyon	PIMO	---	---	---	---	---	2-5	---

Range site number	O24XO27N	O24XO16N	O24XO21N	O25XO14N	O25XO03N	O25XO61N	None
Potential production (lb/acre):							
Favorable years	1,200	350	1,400	1,000	2,500	500	---
Normal years	800	250	1,000	800	1,900	375	---
Unfavorable years	600	150	700	600	1,200	250	---

3134--Itca-Clanalpine-Sumine association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Itca	Clanalpine	Sumine	1	2	3	4
Idaho fescue	FEID	15-25	15-25	1-10	---	20-40	25-50	---
Bluebunch wheatgrass	AGSP	10-20	10-20	20-50	---	20-30	15-30	2-5
Bluegrass	POA++	2-10	2-10	---	---	---	---	---
Basin wildrye	ELCI2	---	---	5-10	---	2-15	---	10-20
Mountain brome	BRMA4	---	---	2-15	---	---	---	---
Thurber needlegrass	STTH2	---	---	2-5	---	2-10	2-10	2-5
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	---	2-5
Spike fescue	HEKI	---	---	---	---	---	2-10	---
Indian ricegrass	ORHY	---	---	---	---	---	---	5-10
Other perennial grasses	PPGG	2-5	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-5	2-5	2-5	---	1-5	---	---
Arrowleaf balsamroot	BASA3	2-5	2-5	2-5	---	1-5	---	---
Balsamroot	BALSA	---	---	---	---	---	2-5	---
Other perennial forbs	PPFF	2-10	2-10	---	---	---	---	2-5
Big sagebrush	ARTR2	5-10	5-10	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	5-15	---	5-15	---	---
Low sagebrush	ARAR8	---	---	---	---	---	10-20	---
Douglas rabbitbrush	CHVI8	---	---	---	---	---	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	---	10-20
Woods rose	ROWO	---	---	---	---	---	---	2-5
Common chokecherry	PRVI	---	---	---	---	---	---	2-5
Green ephedra	EPVI	---	---	---	---	---	---	2-5
Other shrubs	SSSS	5-15	5-15	---	---	---	---	5-10
Singleleaf pinyon	PIMO	2-5	2-5	---	---	---	---	---
Range site number		025X061N	025X061N	024X029N	None	024X021N	024X027N	028B006N
Potential production (lb/acre):								
Favorable years		500	500	1,500	---	1,400	1,200	1,000
Normal years		375	375	1,100	---	1,000	800	600
Unfavorable years		250	250	800	---	700	600	400

3150--Robson-Wiskan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Robson	Wiskan	1	2	3
Bluebunch wheatgrass	AGSP	15-20	10-20	15-30	---	---
Thurber needlegrass	STTH2	15-20	5-15	2-10	---	---
Webber ricegrass	ORWE	5-10	---	---	---	5-10
Sandberg bluegrass	POSE	5-8	---	---	---	2-5
Pine bluegrass	POSC	5-8	---	---	---	2-5
Cusick bluegrass	POCU3	5-8	---	---	---	2-5
Indian ricegrass	ORHY	---	2-10	---	---	---
Bluegrass	POA++	---	2-10	---	---	---
Idaho fescue	FEID	---	---	25-50	---	10-20
Spike fescue	HEKI	---	---	2-10	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10
Balsamroot	BALSA	2-5	---	2-5	---	---
Eriogonum	ERIOG	1-3	---	---	---	---
Phlox	PHLOX	1-3	---	---	---	2-5
Tapertip hawksbeard	CRAC2	---	2-5	---	---	---
Goldenweed	HAPLO2	---	---	---	---	2-5
Other perennial forbs	PPFF	---	5-15	---	---	---
Low sagebrush	ARAR8	20-30	---	10-20	---	5-15
Black sagebrush	ARARN	---	15-30	---	---	5-15
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---
Range site number		O24XO18N	O24XO31N	O24XO27N	None	O24XO16N
Potential production (lb/acre):						
Favorable years		700	700	1,200	---	350
Normal years		500	500	800	---	250
Unfavorable years		300	300	600	---	150

3152--Robson-Reluctan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Robson	Reluctan	1	2	3
Bluebunch wheatgrass	AGSP	15-20	20-30	---	10-20	40-60
Thurber needlegrass	STTH2	15-20	2-10	---	5-15	5-10
Webber ricegrass	ORWE	5-10	---	---	---	---
Sandberg bluegrass	POSE	5-8	---	---	---	---
Pine bluegrass	POSC	5-8	---	---	---	---
Cusick bluegrass	POCU3	5-8	---	---	---	---
Idaho fescue	FEID	---	20-40	---	---	---
Basin wildrye	ELCI2	---	2-15	50-60	---	2-5
Nevada bluegrass	PONE3	---	---	5-15	---	---
Mat muhly	MURI	---	---	2-10	---	---
Sedge	CAREX	---	---	1-5	---	---
Indian ricegrass	ORHY	---	---	---	2-10	---
Bluegrass	POA++	---	---	---	2-10	2-10
Other perennial grasses	PPGG	---	---	15-20	---	---
Balsamroot	BALSA	2-5	---	---	---	---
Eriogonum	ERIOG	1-3	---	---	---	---
Phlox	PHLOX	1-3	---	---	---	---
Tapertip hawksbeard	CRAC2	---	1-5	---	2-5	2-5
Arrowleaf balsamroot	BASA3	---	1-5	---	---	2-5
Other perennial forbs	PPFF	---	---	5-10	5-15	---
Low sagebrush	ARAR8	20-30	---	---	---	---
Mountain big sagebrush	ARTRV	---	5-15	---	---	T-5
Basin big sagebrush	ARTRT*	---	---	10-15	---	---
Black sagebrush	ARARN	---	---	---	15-30	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	5-10
Other shrubs	SSSS	---	---	2-5	---	---
Range site number		O24XO18N	O24XO21N	O25XO03N	O24XO31N	O24XO28N
Potential production (lb/acre):						
Favorable years		700	1,400	2,500	700	1,000
Normal years		500	1,000	1,900	500	700
Unfavorable years		300	700	1,200	300	500

3156--Robson-Old Camp-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Robson	Old Camp	Rock outcrop	1	2	3
Bluebunch wheatgrass	AGSP	15-20	5-10	---	40-60	15-20	---
Thurber needlegrass	STTH2	15-20	20-50	---	5-10	15-20	---
Webber ricegrass	ORWE	5-10	---	---	---	5-10	---
Sandberg bluegrass	POSE	5-8	---	---	---	5-8	---
Pine bluegrass	POSC	5-8	---	---	---	5-8	---
Cusick bluegrass	POCU3	5-8	---	---	---	5-8	---
Bluegrass	POA++	---	---	---	2-10	---	---
Basin wildrye	ELCI2	---	---	---	2-5	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	---	15-20
Balsamroot	BALSA	2-5	2-4	---	---	2-5	---
Eriogonum	ERIOG	1-3	---	---	---	1-3	---
Phlox	PHLOX	1-3	---	---	---	1-3	---
Tapertip hawksbeard	CRAC2	---	2-4	---	2-5	---	---
Arrowleaf balsamroot	BASA3	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	---	---	---	---	5-10
Low sagebrush	ARAR8	20-30	---	---	---	20-30	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	5-10	---	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	---	T-5	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Other shrubs	SSSS	---	2-10	---	---	---	2-5
Range site number		024X018N	024X005N	None	024X028N	024X018N	025X003N
Potential production (lb/acre):							
Favorable years		700	800	---	1,000	700	2,500
Normal years		500	600	---	700	500	1,900
Unfavorable years		300	400	---	500	300	1,200

3203--Dewar-Sodhouse-Bojo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Dewar	Sodhouse	Bojo	1	2
Thurber needlegrass	STTH2	20-50	---	10-20	---	10-20
Bluebunch wheatgrass	AGSP	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	2-10	---	2-10
Indian ricegrass	ORHY	---	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	---	2-5	2-10	---	2-10
Needleandthread	STCO4	---	1-3	---	---	---
Balsamroot	BALSA	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	1-2	---	1-2
Globemallow	SPHAE	---	---	1-2	---	1-2
Phlox	PHLOX	---	---	1-2	---	1-2
Other perennial forbs	PPFF	---	2-8	---	---	---
Wyoming big sagebrush	ARTRW*	15-20	---	30-35	---	30-35
Downy rabbitbrush	CHVIP	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15	---	5-15
Shadscale	ATCO	---	30-40	---	---	---
Bud sagebrush	ARSP5	---	20-30	---	---	---
Winterfat	EULA5	---	2-5	---	---	---
Other shrubs	SSSS	2-10	---	---	---	---
Range site number		024X005N	024X002N	024X020N	None	024X020N
Potential production (lb/acre):						
Favorable years		800	700	700	---	700
Normal years		600	450	450	---	450
Unfavorable years		400	300	300	---	300

3410--Zoesta-Wieland-Akerue association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Zoesta	Wieland	Akerue	1	2	3
Bluebunch wheatgrass	AGSP	15-20	5-10	---	40-60	5-10	---
Thurber needlegrass	STTH2	15-20	20-50	10-15	5-10	20-50	---
Webber ricegrass	ORWE	5-10	---	---	---	---	---
Sandberg bluegrass	POSE	5-8	---	---	---	---	---
Pine bluegrass	POSC	5-8	---	---	---	---	---
Cusick bluegrass	POCU3	5-8	---	---	---	---	---
Indian ricegrass	ORHY	---	---	10-15	---	---	---
Bluegrass	POA++	---	---	2-10	2-10	---	---
Basin wildrye	ELCI2	---	---	---	2-5	---	---
Other perennial grasses	PPGG	---	---	5-20	---	---	---
Balsamroot	BALSA	2-5	2-4	---	---	2-4	---
Eriogonum	ERIOG	1-3	---	---	---	---	---
Phlox	PHLOX	1-3	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	2-5	2-4	---
Globemallow	SPHAE	---	---	2-5	---	---	---
Arrowleaf balsamroot	BASA3	---	---	---	2-5	---	---
Low sagebrush	ARAR8	20-30	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	5-10	15-20	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	2-5	---
Spiny hopsage	GRSP	---	2-5	---	---	2-5	---
Black sagebrush	ARARN	---	---	25-35	---	---	---
Mountain big sagebrush	ARTRV	---	---	---	T-5	---	---
Other shrubs	SSSS	---	2-10	5-35	---	2-10	---
Range site number		O24XO18N	O24XOO5N	O24XO3ON	O24XO28N	O24XOO5N	None
Potential production (lb/acre):							
Favorable years		700	800	500	1,000	800	---
Normal years		500	600	350	700	600	---
Unfavorable years		300	400	250	500	400	---

3413--Zoesta-Reluctan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Zoesta	Reluctan	1	2	3
Bluebunch wheatgrass	AGSP	15-20	20-30	40-60	20-30	---
Thurber needlegrass	STTH2	15-20	2-10	5-10	2-10	---
Webber ricegrass	ORWE	5-10	---	---	---	---
Sandberg bluegrass	POSE	5-8	---	---	---	---
Pine bluegrass	POSC	5-8	---	---	---	---
Cusick bluegrass	POCU3	5-8	---	---	---	---
Idaho fescue	FEID	---	20-40	---	20-40	---
Basin wildrye	ELCI2	---	2-15	2-5	2-15	---
Bluegrass	POA++	---	---	2-10	---	---
Balsamroot	BALSA	2-5	---	---	---	---
Eriogonum	ERIOG	1-3	---	---	---	---
Phlox	PHLOX	1-3	---	---	---	---
Tapertip hawksbeard	CRAC2	---	1-5	2-5	1-5	---
Arrowleaf balsamroot	BASA3	---	1-5	2-5	1-5	---
Low sagebrush	ARAR8	20-30	---	---	---	---
Mountain big sagebrush	ARTRV	---	5-15	T-5	5-15	---
Wyoming big sagebrush	ARTRW*	---	---	5-10	---	---
Range site number		024X018N	024X021N	024X028N	024X021N	None
Potential production (lb/acre):						
Favorable years		700	1,400	1,000	1,400	---
Normal years		500	1,000	700	1,000	---
Unfavorable years		300	700	500	700	---

3415--Zoesta-Handy association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Zoesta	Handy	1	2	3
Bluebunch wheatgrass	AGSP	15-20	20-30	20-30	---	15-20
Thurber needlegrass	STTH2	15-20	15-25	15-25	---	15-20
Webber ricegrass	ORWE	5-10	---	---	---	5-10
Sandberg bluegrass	POSE	5-8	---	---	---	5-8
Pine bluegrass	POSC	5-8	---	---	---	5-8
Cusick bluegrass	POCU3	5-8	---	---	---	5-8
Nevada bluegrass	PONE3	---	2-10	2-10	5-15	---
Basin wildrye	ELCI2	---	---	---	50-60	---
Mat muhly	MURI	---	---	---	2-10	---
Sedge	CAREX	---	---	---	1-5	---
Other perennial grasses	PPGG	---	10-15	10-15	15-20	---
Balsamroot	BALSA	2-5	---	---	---	2-5
Eriogonum	ERIOG	1-3	---	---	---	1-3
Phlox	PHLOX	1-3	---	---	---	1-3
Tapertip hawksbeard	CRAC2	---	2-5	2-5	---	---
Arrowleaf balsamroot	BASA3	---	2-5	2-5	---	---
Other perennial forbs	PPFF	---	2-5	2-5	5-10	---
Low sagebrush	ARAR8	20-30	---	---	---	20-30
Big sagebrush	ARTR2	---	10-15	10-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---
Other shrubs	SSSS	---	5-10	5-10	2-5	---
Range site number		O24XO18N	O25XO14N	O25XO14N	O25XOO3N	O24XO18N
Potential production (lb/acre):						
Favorable years		700	1,000	1,000	2,500	700
Normal years		500	800	800	1,900	500
Unfavorable years		300	600	600	1,200	300

3417--Zoesta-Loncan-Welch association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Zoesta	Loncan	Welch	1	2	3	4
Bluebunch wheatgrass	AGSP	15-20	20-30	---	---	20-30	20-30	---
Thurber needlegrass	STTH2	15-20	2-10	---	---	2-10	15-25	---
Webber ricegrass	ORWE	5-10	---	---	---	---	---	---
Sandberg bluegrass	POSE	5-8	---	---	---	---	---	---
Pine bluegrass	POSC	5-8	---	---	---	---	---	---
Cusick bluegrass	POCU3	5-8	---	---	---	---	---	---
Idaho fescue	FEID	---	20-40	---	---	20-40	---	---
Basin wildrye	ELCI2	---	2-15	50-60	5-15	2-15	---	---
Nevada bluegrass	PONE3	---	---	5-15	40-60	---	2-10	5-10
Mat muhly	MURI	---	---	2-10	5-15	---	---	---
Sedge	CAREX	---	---	1-5	5-15	---	---	5-10
Alpine timothy	PHAL2	---	---	---	20-40	---	---	5-10
Meadow barley	HOBR2	---	---	---	2-5	---	---	2-5
Tufted hairgrass	DECA5	---	---	---	---	---	---	30-60
Other perennial grasses	PPGG	---	---	15-20	2-8	---	10-15	2-10
Balsamroot	BALSA	2-5	---	---	---	---	---	---
Eriogonum	ERIOG	1-3	---	---	---	---	---	---
Phlox	PHLOX	1-3	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	1-5	---	---	1-5	2-5	---
Arrowleaf balsamroot	BASA3	---	1-5	---	---	1-5	2-5	---
Sierra clover	TRWO	---	---	---	2-5	---	---	2-5
Cinquefoil	POTEN	---	---	---	2-5	---	---	2-5
Other perennial forbs	PPFF	---	---	5-10	2-10	---	2-5	10-20
Low sagebrush	ARAR8	20-30	---	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	5-15	---	---	5-15	---	---
Basin big sagebrush	ARTRT*	---	---	10-15	---	---	---	---
Willow	SALIX	---	---	---	2-5	---	---	2-5
Rose	ROSA+	---	---	---	2-5	---	---	---
Big sagebrush	ARTR2	---	---	---	---	---	10-15	---
Other shrubs	SSSS	---	---	2-5	2-5	---	5-10	2-5
Range site number		O24XO18N	O24XO21N	O25XO03N	O25XO06N	O24XO21N	O25XO14N	O25XO05N
Potential production (lb/acre):								
Favorable years		700	1,400	2,500	1,600	1,400	1,000	2,000
Normal years		500	1,000	1,900	1,300	1,000	800	1,700
Unfavorable years		300	700	1,200	800	700	600	1,000

3420--Belate-Sumine-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Belate	Sumine	Softscrabble	1	2	3
Idaho fescue	FEID	25-50	1-10	20-40	10-20	---	---
Bluebunch wheatgrass	AGSP	15-30	20-50	20-30	---	---	---
Thurber needlegrass	STTH2	2-10	2-5	2-10	---	---	---
Spike fescue	HEKI	2-10	---	---	---	---	---
Basin wildrye	ELCI2	---	5-10	2-15	---	---	---
Mountain brome	BRMA4	---	2-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	---	5-10	---	---
Webber ricegrass	ORWE	---	---	---	5-10	---	---
Cusick bluegrass	POCU3	---	---	---	2-5	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---
Balsamroot	BALSA	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-5	1-5	---	---	---
Arrowleaf balsamroot	BASA3	---	2-5	1-5	---	---	---
Goldenweed	HAPLO2	---	---	---	2-5	---	---
Phlox	PHLOX	---	---	---	2-5	---	---
Low sagebrush	ARAR8	10-20	---	---	5-15	---	---
Douglas rabbitbrush	CHVI8	2-5	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	5-15	5-15	---	---	---
Black sagebrush	ARARN	---	---	---	5-15	---	---
Range site number		024X027N	024X029N	024X021N	024X016N	None	None
Potential production (lb/acre):							
Favorable years		1,200	1,500	1,400	350	---	---
Normal years		800	1,100	1,000	250	---	---
Unfavorable years		600	800	700	150	---	---

3423--Belate-Cleavage-Softscrabble association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Belate	Cleavage	Softscrabble	1	2	3	4
Idaho fescue	FEID	25-50	10-20	20-40	---	1-10	---	---
Bluebunch wheatgrass	AGSP	15-30	---	20-30	---	20-50	---	---
Thurber needlegrass	STTH2	2-10	---	2-10	---	2-5	---	---
Spike fescue	HEKI	2-10	---	---	---	---	---	---
Webber ricegrass	ORWE	---	5-10	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-10	---	---	2-5	---	---
Cusick bluegrass	POCU3	---	2-5	---	---	---	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	---	---	---
Pine bluegrass	POSC	---	2-5	---	---	---	---	---
Basin wildrye	ELCI2	---	---	2-15	---	5-10	50-60	---
Mountain brome	BRMA4	---	---	---	---	2-15	---	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-15	5-10
Mat muhly	MURI	---	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	---	1-5	5-10
Tufted hairgrass	DECA5	---	---	---	---	---	---	30-60
Alpine timothy	PHAL2	---	---	---	---	---	---	5-10
Meadow barley	HOBR2	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	---	15-20	2-10
Balsamroot	BALSA	2-5	---	---	---	---	---	---
Goldenweed	HAPLO2	---	2-5	---	---	---	---	---
Phlox	PHLOX	---	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	1-5	---	2-5	---	---
Arrowleaf balsamroot	BASA3	---	---	1-5	---	2-5	---	---
Sierra clover	TRWO	---	---	---	---	---	---	2-5
Cinquefoil	POTEN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	---	---	5-10	10-20
Low sagebrush	ARAR8	10-20	5-15	---	---	---	---	---
Douglas rabbitbrush	CHVI8	2-5	---	---	---	---	---	---
Black sagebrush	ARARN	---	5-15	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	5-15	---	5-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15	---
Willow	SALIX	---	---	---	---	---	---	2-5
Range site number		O24XO27N	O24XO16N	O24XO21N	None	O24XO29N	O25XO03N	O25XO05N
Potential production (lb/acre):								
Favorable years		1,200	350	1,400	---	1,500	2,500	2,000
Normal years		800	250	1,000	---	1,100	1,900	1,700
Unfavorable years		600	150	700	---	800	1,200	1,000

3432--Bregar-Roca-Quarz association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Bregar	Roca	Quarz	1	2
Idaho fescue	FEID	10-20	---	---	30-60	30-50
Webber ricegrass	ORWE	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	5-10	---	---	---	2-5
Cusick bluegrass	POCU3	2-5	---	---	5-10	---
Sandberg bluegrass	POSE	2-5	---	---	---	---
Pine bluegrass	POSC	2-5	---	---	---	---
Bluebunch wheatgrass	AGSP	---	40-80	20-30	2-10	15-30
Thurber needlegrass	STTH2	---	5-15	15-25	---	---
Basin wildrye	ELCI2	---	2-5	---	---	---
Indian ricegrass	ORHY	---	2-5	---	---	---
Nevada bluegrass	PONE3	---	---	2-10	---	---
Bluegrass	POA++	---	---	---	---	2-10
Other perennial grasses	PPGG	---	2-10	10-15	---	5-15
Goldenweed	HAPLO2	2-5	---	---	---	---
Phlox	PHLOX	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-5	2-5	2-5	---
Arrowleaf balsamroot	BASA3	---	---	2-5	---	---
Balsamroot	BALSA	---	---	---	---	2-5
Other perennial forbs	PPFF	---	2-10	2-5	---	5-20
Low sagebrush	ARAR8	5-15	---	---	---	10-25
Black sagebrush	ARARN	5-15	---	---	10-20	---
Big sagebrush	ARTR2	---	2-10	10-15	---	---
Antelope bitterbrush	PUTR2	---	T-10	---	---	0-10
Other shrubs	SSSS	---	2-8	5-10	---	5-15
Range site number		024X016N	025X015N	025X014N	024X042N	025X017N
Potential production (lb/acre):						
Favorable years		350	1,000	1,000	1,000	1,000
Normal years		250	700	800	800	700
Unfavorable years		150	500	600	500	400

3433--Bregar-Punchbowl association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Bregar	Punchbowl	1	2	3	4
Idaho fescue	FEID	10-20	---	10-20	---	---	---
Webber ricegrass	ORWE	5-10	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	5-10	---	5-10	---	---	---
Cusick bluegrass	POCU3	2-5	---	2-5	---	---	---
Sandberg bluegrass	POSE	2-5	---	2-5	---	---	---
Pine bluegrass	POSC	2-5	---	2-5	---	---	---
Indian ricegrass	ORHY	---	10-15	---	---	---	---
Thurber needlegrass	STTH2	---	10-15	---	---	15-25	20-50
Bluegrass	POA++	---	2-10	---	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	---	20-30	5-10
Nevada bluegrass	PONE3	---	---	---	---	2-10	---
Other perennial grasses	PPGG	---	5-20	---	---	10-15	---
Goldenweed	HAPLO2	2-5	---	2-5	---	---	---
Phlox	PHLOX	2-5	---	2-5	---	---	---
Globemallow	SPHAE	---	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	2-5	2-4
Arrowleaf balsamroot	BASA3	---	---	---	---	2-5	---
Balsamroot	BALSA	---	---	---	---	---	2-4
Other perennial forbs	PPFF	---	---	---	---	2-5	---
Low sagebrush	ARAR8	5-15	---	5-15	---	---	---
Black sagebrush	ARARN	5-15	25-35	5-15	---	---	---
Big sagebrush	ARTR2	---	---	---	---	10-15	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	---	15-20
Downy rabbitbrush	CHVIP	---	---	---	---	---	2-5
Spiny hopsage	GRSP	---	---	---	---	---	2-5
Other shrubs	SSSS	---	5-35	---	---	5-10	2-10
Range site number		024X016N	024X030N	024X016N	None	025X014N	024X005N
Potential production (lb/acre):							
Favorable years		350	500	350	---	1,000	800
Normal years		250	350	250	---	800	600
Unfavorable years		150	250	150	---	600	400

3451--Reluctan-Robson-Sumine association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Reluctan	Robson	Sumine	1	2	3	4
Idaho fescue	FEID	20-40	---	1-10	20-40	---	---	---
Bluebunch wheatgrass	AGSP	20-30	15-20	20-50	20-30	---	---	---
Basin wildrye	ELCI2	2-15	---	5-10	2-15	50-60	---	---
Thurber needlegrass	STTH2	2-10	15-20	2-5	2-10	---	---	---
Webber ricegrass	ORWE	---	5-10	---	---	---	---	---
Sandberg bluegrass	POSE	---	5-8	---	---	---	---	---
Pine bluegrass	POSC	---	5-8	---	---	---	---	---
Cusick bluegrass	POCU3	---	5-8	---	---	---	---	---
Mountain brome	BRMA4	---	---	2-15	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	5-15	---	---
Mat muhly	MURI	---	---	---	---	2-10	---	---
Sedge	CAREX	---	---	---	---	1-5	---	---
Other perennial grasses	PPGG	---	---	---	---	15-20	---	---
Tapertip hawksbeard	CRAC2	1-5	---	2-5	1-5	---	---	---
Arrowleaf balsamroot	BASA3	1-5	---	2-5	1-5	---	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Eriogonum	ERIOG	---	1-3	---	---	---	---	---
Phlox	PHLOX	---	1-3	---	---	---	---	---
Other perennial forbs	PPFF	---	---	---	---	5-10	---	---
Mountain big sagebrush	ARTRV	5-15	---	5-15	5-15	---	---	---
Low sagebrush	ARAR8	---	20-30	---	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	10-15	---	---
Other shrubs	SSSS	---	---	---	---	2-5	---	---
Range site number		024X021N	024X018N	024X029N	024X021N	025X003N	None	None
Potential production (lb/acre):								
Favorable years		1,400	700	1,500	1,400	2,500	---	---
Normal years		1,000	500	1,100	1,000	1,900	---	---
Unfavorable years		700	300	800	700	1,200	---	---

3452--Reluctan-Sumine-Colbar association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Reluctan	Sumine	Colbar	1	2
Idaho fescue	FEID	20-40	1-10	---	X	---
Bluebunch wheatgrass	AGSP	20-30	20-50	5-10	X	---
Basin wildrye	ELCI2	2-15	5-10	---	X	50-60
Thurber needlegrass	STTH2	2-10	2-5	20-50	X	---
Mountain brome	BRMA4	---	2-15	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	---	---	---
Nevada bluegrass	PONE3	---	---	---	X	5-15
Mat muhly	MURI	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	15-20
Tapertip hawksbeard	CRAC2	1-5	2-5	2-4	X	---
Arrowleaf balsamroot	BASA3	1-5	2-5	---	X	---
Balsamroot	BALSA	---	---	2-4	---	---
Other perennial forbs	PPFF	---	---	---	---	5-10
Mountain big sagebrush	ARTRV	5-15	5-15	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	---
Spiny hopsage	GRSP	---	---	2-5	---	---
Big sagebrush	ARTR2	---	---	---	X	---
Snowberry	SYMPH	---	---	---	X	---
Currant	RIBES	---	---	---	X	---
Basin big sagebrush	ARTRT*	---	---	---	---	10-15
Other shrubs	SSSS	---	---	2-10	---	2-5
Singleleaf pinyon	PIMO	---	---	---	X	---
Utah juniper	JUOS	---	---	---	X	---
Range site number		O24XO21N	O24XO29N	O24XOO5N	O25XO62N	O25XOO3N
Potential production (lb/acre):						
Favorable years		1,400	1,500	800	500	2,500
Normal years		1,000	1,100	600	350	1,900
Unfavorable years		700	800	400	200	1,200

3453--Reluctan-Locane-Itca association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Reluctan	Locane	Itca	1	2	3	4
Idaho fescue	FEID	20-40	---	15-25	20-40	---	---	---
Bluebunch wheatgrass	AGSP	20-30	15-25	10-20	20-30	15-20	---	---
Basin wildrye	ELCI2	2-15	---	---	2-15	---	30-50	---
Thurber needlegrass	STTH2	2-10	15-25	---	2-10	15-20	---	---
Bluegrass	POA++	---	---	2-10	---	---	---	---
Webber ricegrass	ORWE	---	---	---	---	5-10	---	---
Sandberg bluegrass	POSE	---	---	---	---	5-8	---	---
Pine bluegrass	POSC	---	---	---	---	5-8	---	---
Cusick bluegrass	POCU3	---	---	---	---	5-8	---	---
Western wheatgrass	AGSM	---	---	---	---	---	5-10	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-10	---
Other perennial grasses	PPGG	---	10-20	2-5	---	---	5-15	---
Tapertip hawksbeard	CRAC2	1-5	2-5	2-5	1-5	---	---	---
Arrowleaf balsamroot	BASA3	1-5	2-5	2-5	1-5	---	---	---
Balsamroot	BALSA	---	---	---	---	2-5	---	---
Eriogonum	ERIOG	---	---	---	---	1-3	---	---
Phlox	PHLOX	---	---	---	---	1-3	---	---
Other perennial forbs	PPFF	---	2-10	2-10	---	---	5-10	---
Mountain big sagebrush	ARTRV	5-15	5-10	---	5-15	---	---	---
Wyoming big sagebrush	ARTRW*	---	5-10	---	---	---	---	---
Big sagebrush	ARTR2	---	---	5-10	---	---	---	---
Low sagebrush	ARAR8	---	---	---	---	20-30	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5	---
Other shrubs	SSSS	---	2-10	5-15	---	---	5-10	---
Singleleaf pinyon	PIMO	---	---	2-5	---	---	---	---
Range site number		O24XO21N	O24XO35N	O25XO61N	O24XO21N	O24XO18N	O28BO24N	None
Potential production (lb/acre):								
Favorable years		1,400	500	500	1,400	700	2,800	---
Normal years		1,000	400	375	1,000	500	1,700	---
Unfavorable years		700	250	250	700	300	1,000	---

3455--Reluctan-Roca-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Reluctan	Roca	Colbar	1	2	3	4
Idaho fescue	FEID	20-40	---	---	---	20-40	---	---
Bluebunch wheatgrass	AGSP	20-30	40-60	5-10	---	20-30	2-10	10-20
Basin wildrye	ELCI2	2-15	2-5	---	---	2-15	---	---
Thurber needlegrass	STTH2	2-10	5-10	20-50	---	2-10	10-20	5-15
Bluegrass	POA++	---	2-10	---	---	---	---	2-10
Indian ricegrass	ORHY	---	---	---	---	---	5-15	2-10
Bottlebrush squirreltail	SIHY	---	---	---	---	---	2-10	---
Tapertip hawksbeard	CRAC2	1-5	2-5	2-4	---	1-5	---	2-5
Arrowleaf balsamroot	BASA3	1-5	2-5	---	---	1-5	---	---
Balsamroot	BALSA	---	---	2-4	---	---	---	---
Other perennial forbs	PPFF	---	---	---	---	---	2-8	5-15
Mountain big sagebrush	ARTRV	5-15	T-5	---	---	5-15	---	---
Wyoming big sagebrush	ARTRW*	---	5-10	15-20	---	---	15-25	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	---	2-5	---
Spiny hopsage	GRSP	---	---	2-5	---	---	2-10	---
Ephedra	EPHED	---	---	---	---	---	2-10	---
Shadscale	ATCO	---	---	---	---	---	2-5	---
Black sagebrush	ARARN	---	---	---	---	---	---	15-30
Other shrubs	SSSS	---	---	2-10	---	---	---	---
Range site number		O24XO21N	O24XO28N	O24XO05N	None	O24XO21N	O24XO47N	O24XO31N
Potential production (lb/acre):								
Favorable years		1,400	1,000	800	---	1,400	400	700
Normal years		1,000	700	600	---	1,000	300	500
Unfavorable years		700	500	400	---	700	150	300

3560--Locane-Robson-Bregar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Locane	Robson	Bregar	1	2	3	4
Bluebunch wheatgrass	AGSP	15-25	15-20	---	5-10	20-30	---	10-20
Thurber needlegrass	STTH2	15-25	15-20	---	---	2-10	---	5-15
Webber ricegrass	ORWE	---	5-10	5-10	---	---	---	---
Sandberg bluegrass	POSE	---	5-8	2-5	---	---	---	---
Pine bluegrass	POSC	---	5-8	2-5	---	---	---	---
Cusick bluegrass	POCU3	---	5-8	2-5	5-10	---	---	---
Idaho fescue	FEID	---	---	10-20	30-60	20-40	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---	---	---
Mountain brome	BRMA4	---	---	---	2-5	---	---	---
Sedge	CAREX	---	---	---	2-5	---	---	---
Basin wildrye	ELCI2	---	---	---	---	2-15	---	---
Indian ricegrass	ORHY	---	---	---	---	---	---	2-10
Bluegrass	POA++	---	---	---	---	---	---	2-10
Other perennial grasses	PPGG	10-20	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-5	---	---	1-3	1-5	---	2-5
Arrowleaf balsamroot	BASA3	2-5	---	---	---	1-5	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Eriogonum	ERIOG	---	1-3	---	---	---	---	---
Phlox	PHLOX	---	1-3	2-5	---	---	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---	---
Lupine	LUPIN	---	---	---	1-2	---	---	---
Other perennial forbs	PPFF	2-10	---	---	---	---	---	5-15
Wyoming big sagebrush	ARTRW*	5-10	---	---	---	---	---	---
Mountain big sagebrush	ARTRV	5-10	---	---	5-15	5-15	---	---
Low sagebrush	ARAR8	---	20-30	5-15	---	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	---	15-30
Snowberry	SYMPH	---	---	---	2-5	---	---	---
Other shrubs	SSSS	2-10	---	---	---	---	---	---
Range site number		O24XO35N	O24XO18N	O24XO16N	O24XO23N	O24XO21N	None	O24XO31N
Potential production (lb/acre):								
Favorable years		500	700	350	1,500	1,400	---	700
Normal years		400	500	250	1,200	1,000	---	500
Unfavorable years		250	300	150	900	700	---	300

3561--Locane-Sumine-Glean association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Locane	Sumine	Glean	1	2	3	4
Bluebunch wheatgrass	AGSP	X	20-50	5-10	---	---	40-60	---
Basin wildrye	ELCI2	X	5-10	---	---	---	2-5	50-60
Thurber needlegrass	STTH2	X	2-5	---	---	---	5-10	---
Nevada bluegrass	PONE3	X	---	---	---	---	---	5-15
Idaho fescue	FEID	X	1-10	30-60	---	10-20	---	---
Mountain brome	BRMA4	---	2-15	2-5	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	---	---	5-10	---	---
Cusick bluegrass	POCU3	---	---	5-10	---	2-5	---	---
Sedge	CAREX	---	---	2-5	---	---	---	1-5
Webber ricegrass	ORWE	---	---	---	---	5-10	---	---
Sandberg bluegrass	POSE	---	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	---	2-5	---	---
Bluegrass	POA++	---	---	---	---	---	2-10	---
Mat muhly	MURI	---	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	---	---	---	15-20
Tapertip hawksbeard	CRAC2	X	2-5	1-3	---	---	2-5	---
Arrowleaf balsamroot	BASA3	X	2-5	---	---	---	2-5	---
Lupine	LUPIN	---	---	1-2	---	---	---	---
Goldenweed	HAPLO2	---	---	---	---	2-5	---	---
Phlox	PHLOX	---	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	---	---	---	---	---	5-10
Big sagebrush	ARTR2	X	---	---	---	---	---	---
Snowberry	SYMPH	X	---	2-5	---	---	---	---
Currant	RIBES	X	---	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	5-15	5-15	---	---	T-5	---
Low sagebrush	ARAR8	---	---	---	---	5-15	---	---
Black sagebrush	ARARN	---	---	---	---	5-15	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	---	5-10	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	---	10-15
Singleleaf pinyon	PIMO	X	---	---	---	---	---	---
Utah juniper	JUOS	X	---	---	---	---	---	---
Range site number		025X062N	024X029N	024X023N	None	024X016N	024X028N	025X003N
Potential production (lb/acre):								
Favorable years		500	1,500	1,500	---	350	1,000	2,500
Normal years		350	1,100	1,200	---	250	700	1,900
Unfavorable years		200	800	900	---	150	500	1,200

3564--Locane-Zoesta-Bucan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Locane	Zoesta	Bucan	1	2	3	4
Thurber needlegrass	STTH2	20-50	15-20	5-10	10-15	15-25	---	---
Bluebunch wheatgrass	AGSP	5-10	15-20	40-60	---	20-30	---	---
Webber ricegrass	ORWE	---	5-10	---	---	---	---	---
Sandberg bluegrass	POSE	---	5-8	---	---	---	---	---
Pine bluegrass	POSC	---	5-8	---	---	---	---	---
Cusick bluegrass	POCU3	---	5-8	---	---	---	---	---
Bluegrass	POA++	---	---	2-10	2-10	---	---	---
Basin wildrye	ELCI2	---	---	2-5	---	---	50-60	---
Indian ricegrass	ORHY	---	---	---	10-15	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	2-10	5-15	---
Mat muhly	MURI	---	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	---	1-5	---
Other perennial grasses	PPGG	---	---	---	5-20	10-15	15-20	---
Balsamroot	BALSA	2-4	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	2-5	---	2-5	---	---
Eriogonum	ERIOG	---	1-3	---	---	---	---	---
Phlox	PHLOX	---	1-3	---	---	---	---	---
Arrowleaf balsamroot	BASA3	---	---	2-5	---	2-5	---	---
Globemallow	SPHAE	---	---	---	2-5	---	---	---
Other perennial forbs	PPFF	---	---	---	---	2-5	5-10	---
Wyoming big sagebrush	ARTRW*	15-20	---	5-10	---	---	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---	---	---
Spiny hopsage	GRSP	2-5	---	---	---	---	---	---
Low sagebrush	ARAR8	---	20-30	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	T-5	---	---	---	---
Black sagebrush	ARARN	---	---	---	25-35	---	---	---
Big sagebrush	ARTR2	---	---	---	---	10-15	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15	---
Other shrubs	SSSS	2-10	---	---	5-35	5-10	2-5	---
Range site number		O24XO05N	O24XO18N	O24XO28N	O24XO30N	O25XO14N	O25XO03N	None
Potential production (lb/acre):								
Favorable years		800	700	1,000	500	1,000	2,500	---
Normal years		600	500	700	350	800	1,900	---
Unfavorable years		400	300	500	250	600	1,200	---

3621--Minat-Bojo-Stingdorn association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Minat	Bojo	Stingdorn	1	2
Thurber needlegrass	STTH2	20-50	2-5	---	---	---
Bluebunch wheatgrass	AGSP	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-10	5-15	---	---
Indian ricegrass	ORHY	---	2-10	5-15	---	---
Webber ricegrass	ORWE	---	2-10	---	---	---
Desert needlegrass	STSP3	---	2-5	---	---	---
Sandberg bluegrass	POSE	---	2-5	2-5	---	---
Pine bluegrass	POSC	---	2-5	---	---	---
Needleandthread	STCO4	---	---	1-3	---	---
Eriogonum	ERIOG	---	1-2	---	---	---
Balsamroot	BALSA	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	---	---
Hawksbeard	CREPI	---	1-2	---	---	---
Other perennial forbs	PPFF	---	---	2-8	---	---
Wyoming big sagebrush	ARTRW*	15-20	10-25	---	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---
Spiny hopsage	GRSP	2-5	5-15	2-5	---	---
Shadscale	ATCO	---	10-25	30-40	---	---
Bud sagebrush	ARSP5	---	2-5	20-30	---	---
Winterfat	EULA5	---	---	2-5	---	---
Other shrubs	SSSS	2-10	---	---	---	---
Range site number		024X005N	024X026N	024X002N	None	None
Potential production (lb/acre):						
Favorable years		800	400	700	---	---
Normal years		600	300	450	---	---
Unfavorable years		400	200	300	---	---

3622--Minat-Minat, eroded, association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Minat	Minat, eroded	1	2	3	4
Thurber needlegrass	STTH2	20-50	15-25	20-50	---	---	---
Bluebunch wheatgrass	AGSP	5-10	15-25	5-10	---	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60	---
Nevada bluegrass	PONE3	---	---	---	---	5-15	---
Mat muhly	MURI	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	1-5	---
Other perennial grasses	PPGG	---	10-20	---	---	15-20	---
Balsamroot	BALSA	2-4	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-5	2-4	---	---	---
Arrowleaf balsamroot	BASA3	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	2-10	---	---	5-10	---
Wyoming big sagebrush	ARTRW*	15-20	5-10	15-20	---	---	---
Downy rabbitbrush	CHVIP	2-5	---	2-5	---	---	---
Spiny hopsage	GRSP	2-5	---	2-5	---	---	---
Mountain big sagebrush	ARTRV	---	5-10	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	10-15	---
Other shrubs	SSSS	2-10	2-10	2-10	---	2-5	---
Range site number		024X005N	024X035N	024X005N	None	025X003N	None
Potential production (lb/acre):							
Favorable years		800	500	800	---	2,500	---
Normal years		600	400	600	---	1,900	---
Unfavorable years		400	250	400	---	1,200	---

3624--Minat-Colbar-Atlow association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Minat	Colbar	Atlow	1	2	3	4
Thurber needlegrass	STTH2	20-50	20-50	10-15	20-50	---	---	---
Bluebunch wheatgrass	AGSP	5-10	5-10	---	5-10	---	---	---
Indian ricegrass	ORHY	---	---	10-15	---	---	---	---
Bluegrass	POA++	---	---	2-10	---	---	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60	---	---
Western wheatgrass	AGSM	---	---	---	---	5-15	---	---
Other perennial grasses	PPGG	---	---	5-20	---	---	---	---
Balsamroot	BALSA	2-4	2-4	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	2-4	---	---	---
Globemallow	SPHAE	---	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	---	---	---	2-8	---	---
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	15-20	---	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	2-5	---	---	---
Spiny hopsage	GRSP	2-5	2-5	---	2-5	---	---	---
Black sagebrush	ARARN	---	---	25-35	---	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	15-20	---	---
Black greasewood	SAVE4	---	---	---	---	2-10	---	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---	---
Other shrubs	SSSS	2-10	2-10	5-35	2-10	---	---	---
Range site number		024X005N	024X005N	024X030N	024X005N	024X006N	None	None
Potential production (lb/acre):								
Favorable years		800	800	500	800	1,500	---	---
Normal years		600	600	350	600	1,100	---	---
Unfavorable years		400	400	250	400	600	---	---

3650--McVegas-Old Camp-Kingingham association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		McVegas	Old Camp	Kingingham	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	5-15	2-10	2-10	---
Indian ricegrass	ORHY	5-15	---	5-15	2-10	5-15	---
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	2-10	---
Needleandthread	STCO4	1-3	---	1-3	---	---	---
Thurber needlegrass	STTH2	---	20-50	---	2-5	10-20	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---	---
Webber ricegrass	ORWE	---	---	---	2-10	---	---
Desert needlegrass	STSP3	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---
Eriogonum	ERIOG	---	---	---	1-2	---	---
Balsamroot	BALSA	---	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	1-2	---
Hawksbeard	CREPI	---	---	---	1-2	---	---
Globemallow	SPHAE	---	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	---	2-8	---	---	---
Shadscale	ATCO	30-40	---	30-40	10-25	---	---
Bud sagebrush	ARSP5	20-30	---	20-30	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	5-15	---
Winterfat	EULA5	2-5	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	15-20	---	10-25	30-35	---
Downy rabbitbrush	CHVIP	---	2-5	---	2-5	---	---
Other shrubs	SSSS	---	2-10	---	---	---	---
Range site number		024X002N	024X005N	024X002N	024X026N	024X020N	None
Potential production (lb/acre):							
Favorable years		700	800	700	400	700	---
Normal years		450	600	450	300	450	---
Unfavorable years		300	400	300	200	300	---

3651--McVegas-Boeska association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		McVegas	Beoska	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10	---	5-10
Indian ricegrass	ORHY	5-15	5-15	5-15	---	10-30
Sandberg bluegrass	POSE	2-5	2-5	2-10	---	---
Needleandthread	STCO4	1-3	1-3	---	---	---
Thurber needlegrass	STTH2	---	---	10-20	20-50	---
Bluebunch wheatgrass	AGSP	---	---	---	5-10	---
Other perennial grasses	PPGG	---	---	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	1-2	2-4	---
Globemallow	SPHAE	---	---	1-2	---	---
Phlox	PHLOX	---	---	1-2	---	---
Balsamroot	BALSA	---	---	---	2-4	---
Other perennial forbs	PPFF	2-8	2-8	---	---	5-15
Shadscale	ATCO	30-40	30-40	---	---	---
Bud sagebrush	ARSP5	20-30	20-30	---	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15	2-5	1-5
Winterfat	EULA5	2-5	2-5	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	30-35	15-20	10-25
Downy rabbitbrush	CHVIP	---	---	---	2-5	1-5
Antelope bitterbrush	PUTR2	---	---	---	---	1-5
Black sagebrush	ARARN	---	---	---	---	5-15
Purple sage	SACA9	---	---	---	---	T-5
Other shrubs	SSSS	---	---	---	2-10	2-4
Range site number		O24XO02N	O24XO02N	O24XO20N	O24XO05N	O25XO25N
Potential production (lb/acre):						
Favorable years		700	700	700	800	200
Normal years		450	450	450	600	150
Unfavorable years		300	300	300	400	100

3652--McVegas-Stingdorn-Colbar association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		McVegas	Stingdorn	Colbar	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	---	---	---	2-5
Indian ricegrass	ORHY	5-15	5-15	---	---	---	2-5
Sandberg bluegrass	POSE	2-5	2-5	---	---	---	---
Needleandthread	STCO4	1-3	1-3	---	---	---	2-5
Thurber needlegrass	STTH2	---	---	20-50	---	20-50	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---	5-10	---
Basin wildrye	ELCI2	---	---	---	---	---	10-20
Other perennial grasses	PPGG	---	---	---	---	---	5-10
Balsamroot	BALSA	---	---	2-4	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	2-4	---	2-4	---
Other perennial forbs	PPFF	2-8	2-8	---	---	---	5-10
Shadscale	ATCO	30-40	30-40	---	---	---	---
Bud sagebrush	ARSP5	20-30	20-30	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---	2-5	---
Winterfat	EULAS	2-5	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Greene rabbitbrush	CHGR6	---	---	---	---	---	2-5
Nevada ephedra	EPNE	---	---	---	---	---	2-5
Fourwing saltbush	ATCA2	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	2-10	---	2-10	2-10
Range site number		024X002N	024X002N	024X005N	None	025X005N	028B009N
Potential production (lb/acre):							
Favorable years		700	700	800	---	800	700
Normal years		450	450	600	---	600	400
Unfavorable years		300	300	400	---	400	300

3661--Dun Glen-Whirlo association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Dun Glen	Whirlo	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5
Range site number		024X002N	024X002N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

3690--Izod-Koynik-Rock outcrop association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Izod	Koynik	Rock outcrop	1	2	3
Indian ricegrass	ORHY	10-15	5-15	---	10-15	---	5-15
Thurber needlegrass	STTH2	10-15	---	---	10-15	20-50	10-20
Bluegrass	POA++	2-10	---	---	2-10	---	---
Bottlebrush squirreltail	SIHY	---	5-15	---	---	---	2-10
Sandberg bluegrass	POSE	---	2-5	---	---	---	2-10
Needleandthread	STCO4	---	1-3	---	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	---	5-10	---
Other perennial grasses	PPGG	5-20	---	---	5-20	---	---
Globemallow	SPHAE	2-5	---	---	2-5	---	1-2
Balsamroot	BALSA	---	---	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	---	---	2-4	1-2
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	---	2-8	---	---	---	---
Black sagebrush	ARARN	25-35	---	---	25-35	---	---
Shadscale	ATCO	---	30-40	---	---	---	---
Bud sagebrush	ARSP5	---	20-30	---	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---	2-5	5-15
Winterfat	EULA5	---	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	15-20	30-35
Downy rabbitbrush	CHVIP	---	---	---	---	2-5	---
Other shrubs	SSSS	5-35	---	---	5-35	2-10	---
Range site number		O24XO30N	O24XO02N	None	O24XO30N	O24XO05N	O24XO20N
Potential production (lb/acre):							
Favorable years		500	700	---	500	800	700
Normal years		350	450	---	350	600	450
Unfavorable years		250	300	---	250	400	300

3691--Izod-Rock outcrop association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Izod	Rock outcrop	1	2	3
Indian ricegrass	ORHY	10-15	---	X	---	---
Thurber needlegrass	STTH2	10-15	---	X	20-50	---
Bluegrass	POA++	2-10	---	X	---	---
Bluebunch wheatgrass	AGSP	---	---	X	5-10	---
Basin wildrye	ELCI2	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	1-5
Other perennial grasses	PPGG	5-20	---	X	---	15-20
Globemallow	SPHAE	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	X	2-4	---
Arrowleaf balsamroot	BASA3	---	---	X	---	---
Balsamroot	BALSA	---	---	---	2-4	---
Other perennial forbs	PPFF	---	---	X	---	5-10
Black sagebrush	ARARN	25-35	---	X	---	---
Downy rabbitbrush	CHVIP	---	---	X	2-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	---
Spiny hopsage	GRSP	---	---	---	2-5	---
Basin big sagebrush	ARTRT*	---	---	---	---	10-15
Other shrubs	SSSS	5-35	---	X	2-10	2-5
Utah juniper	JUOS	---	---	X	---	---
Singleleaf pinyon	PIMO	---	---	X	---	---
Range site number		024X030N	None	025X063N	024X005N	025X003N
Potential production (lb/acre):						
Favorable years		500	---	400	800	2,500
Normal years		350	---	250	600	1,900
Unfavorable years		250	---	150	400	1,200

3693--Izod-Attella-Xine association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Izod	Attella	Xine	1	2	3	4
Indian ricegrass	ORHY	10-15	---	---	---	10-15	---	---
Thurber needlegrass	STTH2	10-15	X	2-10	2-10	10-15	---	---
Bluegrass	POA++	2-10	---	---	---	2-10	---	---
Bluebunch wheatgrass	AGSP	---	X	20-30	20-30	---	---	---
Basin wildrye	ELCI2	---	X	2-15	2-15	---	50-60	---
Nevada bluegrass	PONE3	---	X	---	---	---	5-15	---
Idaho fescue	FEID	---	X	20-40	20-40	---	---	---
Mat muhly	MURI	---	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	---	1-5	---
Other perennial grasses	PPGG	5-20	---	---	---	5-20	15-20	---
Globemallow	SPHAE	2-5	---	---	---	2-5	---	---
Tapertip hawksbeard	CRAC2	---	X	1-5	1-5	---	---	---
Arrowleaf balsamroot	BASA3	---	X	1-5	1-5	---	---	---
Other perennial forbs	PPFF	---	---	---	---	---	5-10	---
Black sagebrush	ARARN	25-35	---	---	---	25-35	---	---
Big sagebrush	ARTR2	---	X	---	---	---	---	---
Snowberry	SYMPH	---	X	---	---	---	---	---
Currant	RIBES	---	X	---	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	5-15	5-15	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15	---
Other shrubs	SSSS	5-35	---	---	---	5-35	2-5	---
Singleleaf pinyon	PIMO	---	X	---	---	---	---	---
Utah juniper	JUOS	---	X	---	---	---	---	---
Range site number		O24XO30N	O25XO62N	O24XO21N	O24XO21N	O24XO30N	O25XO03N	None
Potential production (lb/acre):								
Favorable years		500	500	1,400	1,400	500	2,500	---
Normal years		350	350	1,000	1,000	350	1,900	---
Unfavorable years		250	200	700	700	250	1,200	---

3740--Kelk silt loam, saline, 0 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Kelk	1	2	3
Basin wildrye	ELCI2	5-20	20-40	---	50-60
Bottlebrush squirreltail	SIHY	2-5	---	5-15	---
Indian ricegrass	ORHY	2-5	---	5-15	---
Sandberg bluegrass	POSE	---	---	2-5	---
Needleandthread	STCO4	---	---	1-3	---
Western wheatgrass	AGSM	---	---	---	5-15
Thelypody	THELY	2-4	---	---	---
Other perennial forbs	PPFF	---	2-8	2-8	2-8
Black greasewood	SAVE4	20-30	5-15	---	2-10
Basin big sagebrush	ARTRT*	5-15	2-10	---	15-20
Wyoming big sagebrush	ARTRW*	5-10	---	---	---
Spiny hopsage	GRSP	5-15	---	2-5	---
Torrey quailbush	ATTO	---	30-50	---	---
Shadscale	ATCO	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	20-30	---
Winterfat	EULA5	---	---	2-5	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5
Range site number		024X022N	024X015N	024X002N	024X006N
Potential production (lb/acre):					
Favorable years		800	1,500	700	1,500
Normal years		600	1,200	450	1,100
Unfavorable years		350	800	300	600

3741--Kelk-Settlemeyer association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Kelk	Settlemeyer	1	2	3
Basin wildrye	ELCI2	50-60	50-60	20-40	---	10-20
Western wheatgrass	AGSM	5-15	---	---	---	---
Nevada bluegrass	PONE3	---	5-15	---	---	---
Mat muhly	MURI	---	2-10	---	---	---
Sedge	CAREX	---	1-5	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	2-5
Indian ricegrass	ORHY	---	---	---	---	5-10
Bluebunch wheatgrass	AGSP	---	---	---	---	2-5
Thurber needlegrass	STTH2	---	---	---	---	2-5
Other perennial grasses	PPGG	---	15-20	---	T-10	---
Perennial forbs	PPFF	2-8	5-10	2-8	2-8	2-5
Basin big sagebrush	ARTRT*	15-20	10-15	2-10	---	10-20
Black greasewood	SAVE4	2-10	---	5-15	15-30	---
Rubber rabbitbrush	CHNA2	2-5	---	---	---	---
Torrey quailbush	ATTO	---	---	30-50	---	---
Shadscale	ATCO	---	---	---	30-50	---
Bud sagebrush	ARSP5	---	---	---	5-15	---
Seepweed	SUAED	---	---	---	2-15	---
Woods rose	ROWO	---	---	---	---	2-5
Common chokecherry	PRVI	---	---	---	---	2-5
Green ephedra	EPVI	---	---	---	---	2-5
Other shrubs	SSSS	---	2-5	---	---	5-10
Range site number		024X006N	025X003N	024X015N	024X003N	028B006N
Potential production (lb/acre):						
Favorable years		1,500	2,500	1,500	600	1,000
Normal years		1,100	1,900	1,200	450	600
Unfavorable years		600	1,200	800	300	400

3742--Kelk-Ocala association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Kelk	Ocala	1	2	3
Basin wildrye	ELCI2	50-60	40-60	---	5-15	50-60
Western wheatgrass	AGSM	5-15	---	---	---	---
Alkali sacaton	SPAI	---	15-30	---	---	---
Inland saltgrass	DIST	---	5-10	---	5-10	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---
Nevada bluegrass	PONE3	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	T-10	---	15-20
Perennial forbs	PPFF	2-8	---	2-8	T-5	5-10
Basin big sagebrush	ARTRT*	15-20	---	---	---	10-15
Black greasewood	SAVE4	2-10	5-15	15-30	60-75	---
Rubber rabbitbrush	CHNA2	2-5	1-2	---	---	---
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---
Shadscale	ATCO	---	---	30-50	---	---
Bud sagebrush	ARSP5	---	---	5-15	---	---
Seepweed	SUAED	---	---	2-15	---	---
Other shrubs	SSSS	---	---	---	---	2-5
Range site number		024X006N	024X007N	024X003N	024X011N	025X003N
Potential production (lb/acre):						
Favorable years		1,500	1,900	600	500	2,500
Normal years		1,100	1,400	450	350	1,900
Unfavorable years		600	800	300	200	1,200

3840--Jung-Norfork-Buffaran association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Jung	Norfork	Buffaran	1	2	3
Indian ricegrass	ORHY	10-15	10-15	---	10-15	---	---
Thurber needlegrass	STTH2	10-15	10-15	20-50	10-15	20-50	---
Bluegrass	POA++	2-10	2-10	---	2-10	---	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---	5-10	---
Other perennial grasses	PPGG	5-20	5-20	---	5-20	---	---
Globemallow	SPHAE	2-5	2-5	---	2-5	---	---
Balsamroot	BALSA	---	---	2-4	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	2-4	---	2-4	---
Black sagebrush	ARARN	25-35	25-35	---	25-35	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	2-5	---
Spiny hopsage	GRSP	---	---	2-5	---	2-5	---
Other shrubs	SSSS	5-35	5-35	2-10	5-35	2-10	---
Range site number		024X030N	024X030N	024X005N	024X030N	024X005N	None
Potential production (lb/acre):							
Favorable years		500	500	800	500	800	---
Normal years		350	350	600	350	600	---
Unfavorable years		250	250	400	250	400	---

3841--Jung-Itca-Roca association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Jung	Itca	Roca	1	2	3
Indian ricegrass	ORHY	5-15	---	---	---	---	---
Needleandthread	STCO4	5-15	---	---	---	---	---
Pine bluegrass	POSC	2-5	---	---	---	20-30	---
Bluebunch wheatgrass	AGSP	1-3	10-20	40-60	20-30	---	---
Idaho fescue	FEID	---	15-25	---	---	---	---
Bluegrass	POA++	---	2-10	2-10	---	---	---
Thurber needlegrass	STTH2	---	---	5-10	15-25	5-10	---
Basin wildrye	ELCI2	---	---	2-5	---	---	---
Nevada bluegrass	PONE3	---	---	---	2-10	---	---
Other perennial grasses	PPGG	5-10	2-5	---	10-15	5-15	---
Tapertip hawksbeard	CRAC2	---	2-5	2-5	2-5	---	---
Arrowleaf balsamroot	BASA3	---	2-5	2-5	2-5	---	---
Other perennial forbs	PPFF	5-15	2-10	---	2-5	5-10	---
Black sagebrush	ARARN	20-25	---	---	---	---	---
Fourwing saltbush	ATCA2	2-5	---	---	---	---	---
Bud sagebrush	ARSP5	2-5	---	---	---	---	---
Big sagebrush	ARTR2	---	5-10	---	10-15	---	---
Wyoming big sagebrush	ARTRW*	---	---	5-10	---	10-20	---
Mountain big sagebrush	ARTRV	---	---	T-5	---	---	---
Spiny hopsage	GRSP	---	---	---	---	5-15	---
Nevada ephedra	EPNE	---	---	---	---	5-10	---
Other shrubs	SSSS	10-20	5-15	---	5-10	5-10	---
Singleleaf pinyon	PIMO	---	2-5	---	---	---	---
Range site number		028B016N	025X061N	024X028N	025X014N	027X007N	None
Potential production (lb/acre):							
Favorable years		500	500	1,000	1,000	600	---
Normal years		250	375	700	800	450	---
Unfavorable years		150	250	500	600	300	---

3843--Jung, steep-Robson-Jung association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Jung, steep	Robson	Jung	1	2	3	4
Indian ricegrass	ORHY	10-15	---	10-15	---	5-15	---	---
Thurber needlegrass	STTH2	10-15	15-20	10-15	20-50	---	20-50	---
Bluegrass	POA++	2-10	---	2-10	---	---	---	---
Bluebunch wheatgrass	AGSP	---	15-20	---	5-10	---	5-10	---
Webber ricegrass	ORWE	---	5-10	---	---	---	---	---
Sandberg bluegrass	POSE	---	5-8	---	---	2-5	---	---
Pine bluegrass	POSC	---	5-8	---	---	---	---	---
Cusick bluegrass	POCU3	---	5-8	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-15	---	---
Needleandthread	STCO4	---	---	---	---	1-3	---	---
Other perennial grasses	PPGG	5-20	---	5-20	---	---	---	---
Globemallow	SPHAE	2-5	---	2-5	---	---	---	---
Balsamroot	BALSA	---	2-5	---	2-4	---	2-4	---
Eriogonum	ERIOG	---	1-3	---	---	---	---	---
Phlox	PHLOX	---	1-3	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	2-4	---	2-4	---
Other perennial forbs	PPFF	---	---	---	---	2-8	---	---
Black sagebrush	ARARN	25-35	---	25-35	---	---	---	---
Low sagebrush	ARAR8	---	20-30	---	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	15-20	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	---	2-5	---	2-5	---
Spiny hopsage	GRSP	---	---	---	2-5	2-5	2-5	---
Shadscale	ATCO	---	---	---	---	30-40	---	---
Bud sagebrush	ARSP5	---	---	---	---	20-30	---	---
Winterfat	EULA5	---	---	---	---	2-5	---	---
Other shrubs	SSSS	5-35	---	5-35	2-10	---	2-10	---
Range site number		O24XO30N	O24XO18N	O24XO30N	O24XO05N	O24XO02N	O24XO05N	None
Potential production (lb/acre):								
Favorable years		500	700	500	800	700	800	---
Normal years		350	500	350	600	450	600	---
Unfavorable years		250	300	250	400	300	400	---

3845--Jung-Stingdorn-Atlow association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Jung	Stingdorn	Atlow	1	2	3	4
Indian ricegrass	ORHY	10-15	5-15	10-15	5-15	5-15	---	---
Thurber needlegrass	STTH2	10-15	---	10-15	---	---	---	---
Bluegrass	POA++	2-10	---	2-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	---	5-15	5-15	---	---
Sandberg bluegrass	POSE	---	2-5	---	2-5	2-5	---	---
Needleandthread	STCO4	---	1-3	---	1-3	1-3	---	---
Other perennial grasses	PPGG	5-20	---	5-20	---	---	---	---
Globemallow	SPHAE	2-5	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	2-8	---	2-8	2-8	---	---
Black sagebrush	ARARN	25-35	---	25-35	---	---	---	---
Shadscale	ATCO	---	30-40	---	30-40	30-40	---	---
Bud sagebrush	ARSP5	---	20-30	---	20-30	20-30	---	---
Spiny hopsage	GRSP	---	2-5	---	2-5	2-5	---	---
Winterfat	EULA5	---	2-5	---	2-5	2-5	---	---
Other shrubs	SSSS	5-35	---	5-35	---	---	---	---
Range site number		024X030N	024X002N	024X030N	024X002N	024X002N	None	None
Potential production (lb/acre):								
Favorable years		500	700	500	700	700	---	---
Normal years		350	450	350	450	450	---	---
Unfavorable years		250	300	250	300	300	---	---

3846--Jung-Wiskan association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Jung	Wiskan	1	2	3	4
Indian ricegrass	ORHY	10-15	2-10	---	---	---	---
Thurber needlegrass	STTH2	10-15	5-15	20-50	15-25	---	---
Bluegrass	POA++	2-10	2-10	---	---	---	---
Bluebunch wheatgrass	AGSP	---	10-20	5-10	15-25	---	---
Basin wildrye	ELCI2	---	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	5-20	---	---	10-20	---	15-20
Globemallow	SPHAE	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-5	2-4	2-5	---	---
Balsamroot	BALSA	---	---	2-4	---	---	---
Arrowleaf balsamroot	BASA3	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	5-15	---	2-10	---	5-10
Black sagebrush	ARARN	25-35	15-30	---	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	5-10	---	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	---	---
Spiny hopsage	GRSP	---	---	2-5	---	---	---
Mountain big sagebrush	ARTRV	---	---	---	5-10	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Other shrubs	SSSS	5-35	---	2-10	2-10	---	2-5
Range site number		024X030N	024X031N	024X005N	024X035N	None	025X003N
Potential production (lb/acre):							
Favorable years		500	700	800	500	---	2,500
Normal years		350	500	600	400	---	1,900
Unfavorable years		250	300	400	250	---	1,200

3881--Layview-Packer-Hapgood association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Layview	Packer	Hapgood	1	2	3	4
Idaho fescue	FEID	10-20	---	5-15	---	---	10-20	30-60
Webber ricegrass	ORWE	5-10	---	---	---	---	5-10	---
Bottlebrush squirreltail	SIHY	5-10	2-5	---	---	---	5-10	---
Cusick bluegrass	POCU3	2-5	---	---	---	---	2-5	5-10
Sandberg bluegrass	POSE	2-5	---	---	---	---	2-5	---
Pine bluegrass	POSC	2-5	5-10	---	---	---	2-5	---
Bluebunch wheatgrass	AGSP	---	5-15	5-10	---	---	---	2-10
Thurber needlegrass	STTH2	---	2-5	---	---	---	---	---
Indian ricegrass	ORHY	---	2-5	---	---	---	---	---
Mountain brome	BRMA4	---	---	10-15	---	---	---	---
Slender wheatgrass	AGTR	---	---	10-15	---	---	---	---
Bearded wheatgrass	AGSU	---	---	10-15	---	---	---	---
Spike fescue	HEKI	---	---	2-15	---	---	---	---
Bulbous oniongrass	MEBU	---	---	2-5	---	---	---	---
Nevada bluegrass	PONE3	---	---	2-5	---	---	---	---
Other perennial grasses	PPGG	---	10-15	---	---	---	---	---
Goldenweed	HAPLO2	2-5	---	---	---	---	2-5	---
Phlox	PHLOX	2-5	---	---	---	---	2-5	---
Geranium	GERAN	---	---	2-5	---	---	---	---
Groundsel	SENEC	---	---	2-5	---	---	---	---
Lupine	LUPIN	---	---	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	10-15	---	---	---	---	---
Low sagebrush	ARAR8	5-15	25-30	---	---	---	5-15	---
Black sagebrush	ARARN	5-15	---	---	---	---	5-15	10-20
Serviceberry	AMELA	---	---	5-10	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	5-10	---	---	---	---
Snowberry	SYMPH	---	---	2-10	---	---	---	---
Other shrubs	SSSS	---	10-20	---	---	---	---	---
Range site number		O24XO16N	O28BO37N	O24XO32N	None	None	O24XO16N	O24XO42N
Potential production (lb/acre):								
Favorable years		350	700	2,200	---	---	350	1,000
Normal years		250	500	1,700	---	---	250	800
Unfavorable years		150	300	1,200	---	---	150	500

3950--Hooplite-Jung-Izod association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Hooplite	Jung	Izod	1	2	3	4
Indian ricegrass	ORHY	10-15	10-15	10-15	X	---	10-30	---
Thurber needlegrass	STTH2	10-15	10-15	10-15	X	20-50	---	---
Bluegrass	POA++	2-10	2-10	2-10	X	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	X	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	5-10	---
Other perennial grasses	PPGG	5-20	5-20	5-20	X	---	10-20	---
Globemallow	SPHAE	2-5	2-5	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	X	2-4	---	---
Arrowleaf balsamroot	BASA3	---	---	---	X	---	---	---
Balsamroot	BALSA	---	---	---	---	2-4	---	---
Other perennial forbs	PPFF	---	---	---	X	---	5-15	---
Black sagebrush	ARARN	25-35	25-35	25-35	X	---	5-15	---
Downy rabbitbrush	CHVIP	---	---	---	X	2-5	1-5	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	15-20	10-25	---
Spiny hopsage	GRSP	---	---	---	---	2-5	1-5	---
Antelope bitterbrush	PUTR2	---	---	---	---	---	1-5	---
Purple sage	SACA9	---	---	---	---	---	T-5	---
Other shrubs	SSSS	5-35	5-35	5-35	X	2-10	2-4	---
Utah juniper	JUOS	---	---	---	X	---	---	---
Singleleaf pinyon	PIMO	---	---	---	X	---	---	---
Range site number		O24XO30N	O24XO30N	O24XO30N	O25XO63N	O24XOO5N	O25XO25N	None
Potential production (lb/acre):								
Favorable years		500	500	500	400	800	200	---
Normal years		350	350	350	250	600	150	---
Unfavorable years		250	250	250	150	400	100	---

3961--Pineval-Orovada-Beoska association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Pineval	Orovada	Beoska	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	---	2-5	20-50	---
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	---	5-15	2-10	---	---
Indian ricegrass	ORHY	---	---	5-15	2-10	---	---
Sandberg bluegrass	POSE	---	---	2-5	2-5	---	---
Needleandthread	STCO4	---	---	1-3	---	---	---
Webber ricegrass	ORWE	---	---	---	2-10	---	---
Desert needlegrass	STSP3	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---
Basin wildrye	ELCI2	---	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	---	15-20
Eriogonum	ERIOG	---	---	---	1-2	---	---
Balsamroot	BALSA	2-4	2-4	---	---	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	---	2-4	---
Hawksbeard	CREPI	---	---	---	1-2	---	---
Other perennial forbs	PPFF	---	---	2-8	---	---	5-10
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	10-25	15-20	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	2-5	2-5	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5	---
Shadscale	ATCO	---	---	30-40	10-25	---	---
Bud sagebrush	ARSP5	---	---	20-30	2-5	---	---
Winterfat	EULA5	---	---	2-5	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	10-15
Other shrubs	SSSS	2-10	2-10	---	---	2-10	2-5
Range site number		024X005N	024X005N	024X002N	024X026N	024X005N	025X003N
Potential production (lb/acre):							
Favorable years		800	800	700	400	800	2,500
Normal years		600	600	450	300	600	1,900
Unfavorable years		400	400	300	200	400	1,200

3990--Settlemeyer fine sandy loam, drained, 0 to 4 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Settlemeyer	1	2	3
Basin wildrye	ELCI2	50-60	50-60	---	---
Nevada bluegrass	PONE3	5-15	---	---	5-10
Mat muhly	MURI	2-10	---	---	2-10
Sedge	CAREX	1-5	---	---	---
Western wheatgrass	AGSM	---	5-15	---	---
Thurber needlegrass	STTH2	---	---	20-50	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---
Wildrye	ELMYU	---	---	---	30-60
Inland saltgrass	DIST	---	---	---	5-10
Other perennial grasses	PPGG	15-20	---	---	5-15
Balsamroot	BALSA	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	2-4	---
Sierra clover	TRWO	---	---	---	2-5
Other perennial forbs	PPFF	5-10	2-8	---	5-10
Basin big sagebrush	ARTRT*	10-15	15-20	---	2-5
Black greasewood	SAVE4	---	2-10	---	---
Rubber rabbitbrush	CHNA2	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	2-5	---
Spiny hopsage	GRSP	---	---	2-5	---
Willow	SALIX	---	---	---	5-10
Silver sagebrush	ARCA13	---	---	---	2-5
Other shrubs	SSSS	2-5	---	2-10	2-8
Range site number		O25XO03N	O24XO06N	O24XO05N	O25XO01N
Potential production (lb/acre):					
Favorable years		2,500	1,500	800	3,000
Normal years		1,900	1,100	600	2,500
Unfavorable years		1,200	600	400	1,800

3992--Settlemeyer, drained-Settlemeyer loams

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Settlemeyer, drained	Settlemeyer	1	2
Basin wildrye	ELCI2	50-60	---	---	50-60
Nevada bluegrass	PONE3	5-15	5-10	---	---
Mat muhly	MURI	2-10	2-10	---	---
Sedge	CAREX	1-5	---	---	---
Wildrye	ELMYU	---	30-60	---	---
Inland saltgrass	DIST	---	5-10	---	---
Thurber needlegrass	STTH2	---	---	20-50	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---
Western wheatgrass	AGSM	---	---	---	5-15
Other perennial grasses	PPGG	15-20	5-15	---	---
Sierra clover	TRWO	---	2-5	---	---
Balsamroot	BALSA	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	2-4	---
Other perennial forbs	PPFF	5-10	5-10	---	2-8
Basin big sagebrush	ARTRT*	10-15	2-5	---	15-20
Willow	SALIX	---	5-10	---	---
Silver sagebrush	ARCA13	---	2-5	---	---
Wyoming big sagebrush	ARTRW*	---	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	2-5	---
Spiny hopsage	GRSP	---	---	2-5	---
Black greasewood	SAVE4	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	2-5
Other shrubs	SSSS	2-5	2-8	2-10	---
Range site number		025X003N	025X001N	024X005N	024X006N
Potential production (lb/acre):					
Favorable years		2,500	3,000	800	1,500
Normal years		1,900	2,500	600	1,100
Unfavorable years		1,200	1,800	400	600

4051--Attella-Xine-Kram association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Attella	Xine	Kram	1	2
Bluebunch wheatgrass	AGSP	X	20-30	X	---	---
Basin wildrye	ELCI2	X	2-15	---	---	50-60
Thurber needlegrass	STTH2	X	2-10	X	---	---
Nevada bluegrass	PONE3	X	---	---	---	5-15
Idaho fescue	FEID	X	20-40	---	---	---
Indian ricegrass	ORHY	---	---	X	---	---
Bluegrass	POA++	---	---	X	---	---
Mat muhly	MURI	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	X	---	15-20
Tapertip hawksbeard	CRAC2	X	1-5	X	---	---
Arrowleaf balsamroot	BASA3	X	1-5	X	---	---
Other perennial forbs	PPFF	---	---	X	---	5-10
Big sagebrush	ARTR2	X	---	---	---	---
Snowberry	SYMPH	X	---	---	---	---
Currant	RIBES	X	---	---	---	---
Mountain big sagebrush	ARTRV	---	5-15	---	---	---
Black sagebrush	ARARN	---	---	X	---	---
Downy rabbitbrush	CHVIP	---	---	X	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	10-15
Other shrubs	SSSS	---	---	X	---	2-5
Singleleaf pinyon	PIMO	X	---	X	---	---
Utah juniper	JUOS	X	---	X	---	---
Range site number		O25XO62N	O24XO21N	O25XO63N	None	O25XO03N
Potential production (lb/acre):						
Favorable years		500	1,400	400	---	2,500
Normal years		350	1,000	250	---	1,900
Unfavorable years		200	700	150	---	1,200

4070--Genaw-Wieland-Grina association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Genaw	Wieland	Grina	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	X	---	5-10	---
Bluebunch wheatgrass	AGSP	5-10	5-10	X	---	---	---
Indian ricegrass	ORHY	---	---	X	---	15-30	---
Bluegrass	POA++	---	---	X	---	---	---
Basin wildrye	ELCI2	---	---	X	50-60	---	50-60
Nevada bluegrass	PONE3	---	---	---	5-15	---	---
Mat muhly	MURI	---	---	---	2-10	---	---
Sedge	CAREX	---	---	---	1-5	---	---
Galleta	HIJA	---	---	---	---	T-2	---
Western wheatgrass	AGSM	---	---	---	---	---	5-15
Other perennial grasses	PPGG	---	---	---	15-20	5-15	---
Balsamroot	BALSA	2-4	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	X	---	---	---
Arrowleaf balsamroot	BASA3	---	---	X	---	---	---
Globemallow	SPHAE	---	---	---	---	2-4	---
Other perennial forbs	PPFF	---	---	---	5-10	---	2-8
Wyoming big sagebrush	ARTRW*	15-20	15-20	---	---	15-30	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	---	---	2-5	---
Big sagebrush	ARTR2	---	---	X	---	---	---
Douglas rabbitbrush	CHVI8	---	---	X	---	---	---
Basin big sagebrush	ARTRT*	---	---	---	10-15	---	15-20
Shadscale	ATCO	---	---	---	---	2-5	---
Black greasewood	SAVE4	---	---	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	2-10	2-10	---	2-5	2-5	---
Utah juniper	JUOS	---	---	X	---	---	---
Range site number		O24XO05N	O24XO05N	O25XO59N	O25XO03N	O24XO45N	O24XO06N
Potential production (lb/acre):							
Favorable years		800	800	500	2,500	350	1,500
Normal years		600	600	350	1,900	200	1,100
Unfavorable years		400	400	200	1,200	100	600

4071--Genaw-Perlor-Puett association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Genaw	Perlor	Puett	1	2	3
Thurber needlegrass	STTH2	10-20	---	---	10-20	20-50	10-15
Indian ricegrass	ORHY	5-15	5-15	10-30	5-15	---	10-15
Bottlebrush squirreltail	SIHY	2-10	5-15	5-10	2-10	---	---
Sandberg bluegrass	POSE	2-10	2-5	---	2-10	---	---
Needleandthread	STCO4	---	1-3	---	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	---	5-10	---
Bluegrass	POA++	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	10-20	---	---	5-20
Tapertip hawksbeard	CRAC2	1-2	---	---	1-2	2-4	---
Globemallow	SPHAE	1-2	---	---	1-2	---	2-5
Phlox	PHLOX	1-2	---	---	1-2	---	---
Balsamroot	BALSA	---	---	---	---	2-4	---
Other perennial forbs	PPFF	---	2-8	5-15	---	---	---
Wyoming big sagebrush	ARTRW*	30-35	---	10-25	30-35	15-20	---
Spiny hopsage	GRSP	5-15	2-5	1-5	5-15	2-5	---
Shadscale	ATCO	---	30-40	---	---	---	---
Bud sagebrush	ARSP5	---	20-30	---	---	---	---
Winterfat	EULA5	---	2-5	---	---	---	---
Downy rabbitbrush	CHVIP	---	---	1-5	---	2-5	---
Antelope bitterbrush	PUTR2	---	---	1-5	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	25-35
Purple sage	SACA9	---	---	T-5	---	---	---
Other shrubs	SSSS	---	---	2-4	---	2-10	5-35
Range site number		024X020N	024X002N	025X025N	024X020N	024X005N	024X030N
Potential production (lb/acre):							
Favorable years		700	700	200	700	800	500
Normal years		450	450	150	450	600	350
Unfavorable years		300	300	100	300	400	250

4072--Genaw-Orovada-Puett association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Genaw	Orovada	Puett	1	2	3
Indian ricegrass	ORHY	20-30	20-30	10-30	15-30	10-15	10-20
Needleandthread	STCO4	10-20	10-20	---	---	---	20-30
Bottlebrush squirreltail	SIHY	5-10	5-10	5-10	---	---	2-5
Sandberg bluegrass	POSE	2-5	2-5	---	---	---	---
Galleta	HIJA	---	---	---	T-2	---	---
Thurber needlegrass	STTH2	---	---	---	5-10	10-15	---
Bluegrass	POA++	---	---	---	---	2-10	---
Thickspike wheatgrass	AGDA	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	10-20	5-15	5-20	---
Globemallow	SPHAE	---	---	---	2-4	2-5	---
Other perennial forbs	PPFF	2-5	2-5	5-15	---	---	10-20
Wyoming big sagebrush	ARTRW*	15-20	15-20	10-25	15-30	---	T-5
Downy rabbitbrush	CHVIP	---	---	1-5	---	---	---
Spiny hopsage	GRSP	---	---	1-5	2-5	---	T-5
Antelope bitterbrush	PUTR2	---	---	1-5	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	25-35	---
Purple sage	SACA9	---	---	T-5	---	---	---
Shadscale	ATCO	---	---	---	2-5	---	---
Basin big sagebrush	ARTRT*	---	---	---	---	---	5-15
Other shrubs	SSSS	5-15	5-15	2-4	2-5	5-35	---
Range site number		028B010N	028B010N	025X025N	024X045N	024X030N	024X017N
Potential production (lb/acre):							
Favorable years		800	800	200	350	500	900
Normal years		600	600	150	200	350	700
Unfavorable years		400	400	100	100	250	500

4091--Coztur-Genaw association

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Coztur	Genaw	1	2	3
Bluebunch wheatgrass	AGSP	20-30	5-10	---	5-10	20-30
Thurber needlegrass	STTH2	15-25	20-50	---	20-50	15-25
Nevada bluegrass	PONE3	2-10	---	---	---	2-10
Indian ricegrass	ORHY	---	---	10-30	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---
Other perennial grasses	PPGG	10-15	---	10-20	---	10-15
Tapertip hawksbeard	CRAC2	2-5	2-4	---	2-4	2-5
Arrowleaf balsamroot	BASA3	2-5	---	---	---	2-5
Balsamroot	BALSA	---	2-4	---	2-4	---
Other perennial forbs	PPFF	2-5	---	5-15	---	2-5
Big sagebrush	ARTR2	10-15	---	---	---	10-15
Wyoming big sagebrush	ARTRW*	---	15-20	10-25	15-20	---
Downy rabbitbrush	CHVIP	---	2-5	1-5	2-5	---
Spiny hopsage	GRSP	---	2-5	1-5	2-5	---
Antelope bitterbrush	PUTR2	---	---	1-5	---	---
Black sagebrush	ARARN	---	---	5-15	---	---
Purple sage	SACA9	---	---	T-5	---	---
Other shrubs	SSSS	5-10	2-10	2-4	2-10	5-10
Range site number		025X014N	024X005N	025X025N	024X005N	025X014N
Potential production (lb/acre):						
Favorable years		1,000	800	200	800	1,000
Normal years		800	600	150	600	800
Unfavorable years		600	400	100	400	600

4093--Coztur-Teguro-Punchbowl association

[An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Coztur	Teguro	Punchbowl	1	2	3
Bluebunch wheatgrass	AGSP	20-30	X	---	20-30	---	X
Thurber needlegrass	STTH2	15-25	X	10-15	15-25	5-10	X
Nevada bluegrass	PONE3	2-10	X	---	2-10	---	---
Basin wildrye	ELCI2	---	X	---	---	---	X
Idaho fescue	FEID	---	X	---	---	---	---
Indian ricegrass	ORHY	---	---	10-15	---	15-30	X
Bluegrass	POA++	---	---	2-10	---	---	X
Galleta	HIJA	---	---	---	---	T-2	---
Other perennial grasses	PPGG	10-15	---	5-20	10-15	5-15	---
Tapertip hawksbeard	CRAC2	2-5	X	---	2-5	---	X
Arrowleaf balsamroot	BASA3	2-5	X	---	2-5	---	X
Globemallow	SPHAE	---	---	2-5	---	2-4	---
Other perennial forbs	PPFF	2-5	---	---	2-5	---	---
Big sagebrush	ARTR2	10-15	X	---	10-15	---	X
Snowberry	SYMPH	---	X	---	---	---	---
Currant	RIBES	---	X	---	---	---	---
Black sagebrush	ARARN	---	---	25-35	---	---	---
Wyoming big sagebrush	ARTRW*	---	---	---	---	15-30	---
Spiny hopsage	GRSP	---	---	---	---	2-5	---
Shadscale	ATCO	---	---	---	---	2-5	---
Douglas rabbitbrush	CHVI8	---	---	---	---	---	X
Other shrubs	SSSS	5-10	---	5-35	5-10	2-5	---
Singleleaf pinyon	PIMO	---	X	---	---	---	---
Utah juniper	JUOS	---	X	---	---	---	X
Range site number		025X014N	025X062N	024X030N	025X014N	024X045N	025X059N
Potential production (lb/acre):							
Favorable years		1,000	500	500	1,000	350	500
Normal years		800	350	350	800	200	350
Unfavorable years		600	200	250	600	100	200

4140--Welch loam, drained, 2 to 8 percent slopes

[Absence of an entry indicates that the named plant is not a key species in the potential native plant community]

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Welch	1	2
Basin wildrye	ELCI2	50-60	5-10	---
Nevada bluegrass	PONE3	5-15	---	5-10
Mat muhly	MURI	2-10	---	---
Sedge	CAREX	1-5	---	5-10
Bearded wheatgrass	AGSU	---	1-10	---
Nodding brome	BRAN	---	1-10	---
Slender wheatgrass	AGTR	---	2-5	---
Slender hairgrass	DEEL	---	2-5	---
Tufted hairgrass	DECA5	---	---	30-60
Alpine timothy	PHAL2	---	---	5-10
Meadow barley	HOBR2	---	---	2-5
Other perennial grasses	PPGG	15-20	5-10	2-10
Sierra clover	TRWO	---	---	2-5
Cinquefoil	POTEN	---	---	2-5
Other perennial forbs	PPFF	5-10	10-20	10-20
Basin big sagebrush	ARTRT*	10-15	---	---
Woods rose	ROWO	---	5-10	---
Common chokecherry	PRVI	---	5-10	---
Snowberry	SYMPH	---	2-5	---
Willow	SALIX	---	---	2-5
Other shrubs	SSSS	2-5	5-10	2-5
Range site number		025X003N	028B025N	025X005N
Potential production (lb/acre):				
Favorable years		2,500	1,700	2,000
Normal years		1,900	1,300	1,700
Unfavorable years		1,200	900	1,000

SOIL LEGEND

AREAS DOMINATED BY SOILS ON BOLSON AND SEMIBOLSON FLOORS

1 PLAYAS

2 WENDANE-GUND-BATAN: Level and nearly level, very deep, somewhat poorly drained and moderately well drained soils on alluvial flats, alluvial flat remnants, lake plains, and lake plain terraces

3 SONOMA-RIXIE-PARANAT: Level and nearly level, very deep, poorly drained soils on axial stream flood plains

4 WENDANE-BATAN-BUBUS: Level and nearly level, very deep, somewhat poorly drained, moderately well drained, and well drained soils on alluvial flats and alluvial flat remnants

5 TWEBA-WENDANE: Level to gently sloping, very deep, somewhat poorly drained and moderately well drained soils on axial stream flood plains and alluvial flats

AREAS DOMINATED BY SOILS ON FAN PIEDMONTS AND FAN SKIRTS

6 BROYLES-CREEMON-WHOLAN: Nearly level and gently sloping, very deep, well drained soils on fan skirts and inset fans

7 OROVADA-BROYLES-SHABLISS: Nearly level to moderately steep, shallow or very deep, well drained soils on fan aprons, fan skirts, and fan piedmont remnants

8 BEOSKA-BROYLES-WHIRLO: Nearly level to moderately sloping, very deep, well drained soils on fan piedmont remnants, fan skirts, and inset fans

9 RICERT-OROVADA-TENABO: Nearly level to moderately sloping, shallow and very deep, well drained soils on fan piedmont remnants and fan skirts

10 BOULFLAT-OROVADA: Gently sloping and moderately sloping, moderately deep and very deep, well drained soils on fan piedmont remnants and fan skirts

11 BUFFARAN-ALLOR-CHIARA: Gently sloping to strongly sloping, shallow and very deep, well drained soils on fan piedmont remnants and fan skirts

12 BIOYA-CHIARA-CORTEZ: Gently sloping to strongly sloping, shallow and moderately deep, well drained soils on fan piedmont remnants

AREAS DOMINATED BY SOILS ON FOOTHILLS AND LOW MOUNTAINS

13 MCVEGAS-STINGDORN-OLD CAMP: Gently sloping to steep, shallow, well drained soils on foothills

14 PUETT-WIELAND-GENAW: Gently sloping to strongly sloping, very deep, well drained soils on mountain valley fans and moderately steep and steep, shallow, well drained soils on low, rolling foothills

15 TESSFIVE-PUETT-GENAW: Strongly sloping to steep, shallow, well drained soils on foothills and low mountains

16 ROBSON-AKERUE-BUFFARAN: Moderately sloping to steep, shallow, well drained soils on foothills and low mountains

17 ROCA-TRUNK-ALLEY: Moderately sloping to very steep, moderately deep and very deep, well drained soils on foothills

18 OLD CAMP-COLBAR-RELUCTAN: Strongly sloping to steep, shallow and moderately deep, well drained soils on low mountains

AREAS DOMINATED BY SOILS ON HIGH MOUNTAINS

19 SUMINE-CHEN-ROCK OUTCROP: Rock outcrop and gently sloping to steep, shallow and moderately deep, well drained soils on high mountains

20 ITCA-RELUCTAN-PUNCHBOWL: Moderately steep and steep, shallow and moderately deep, well drained soils on high mountains

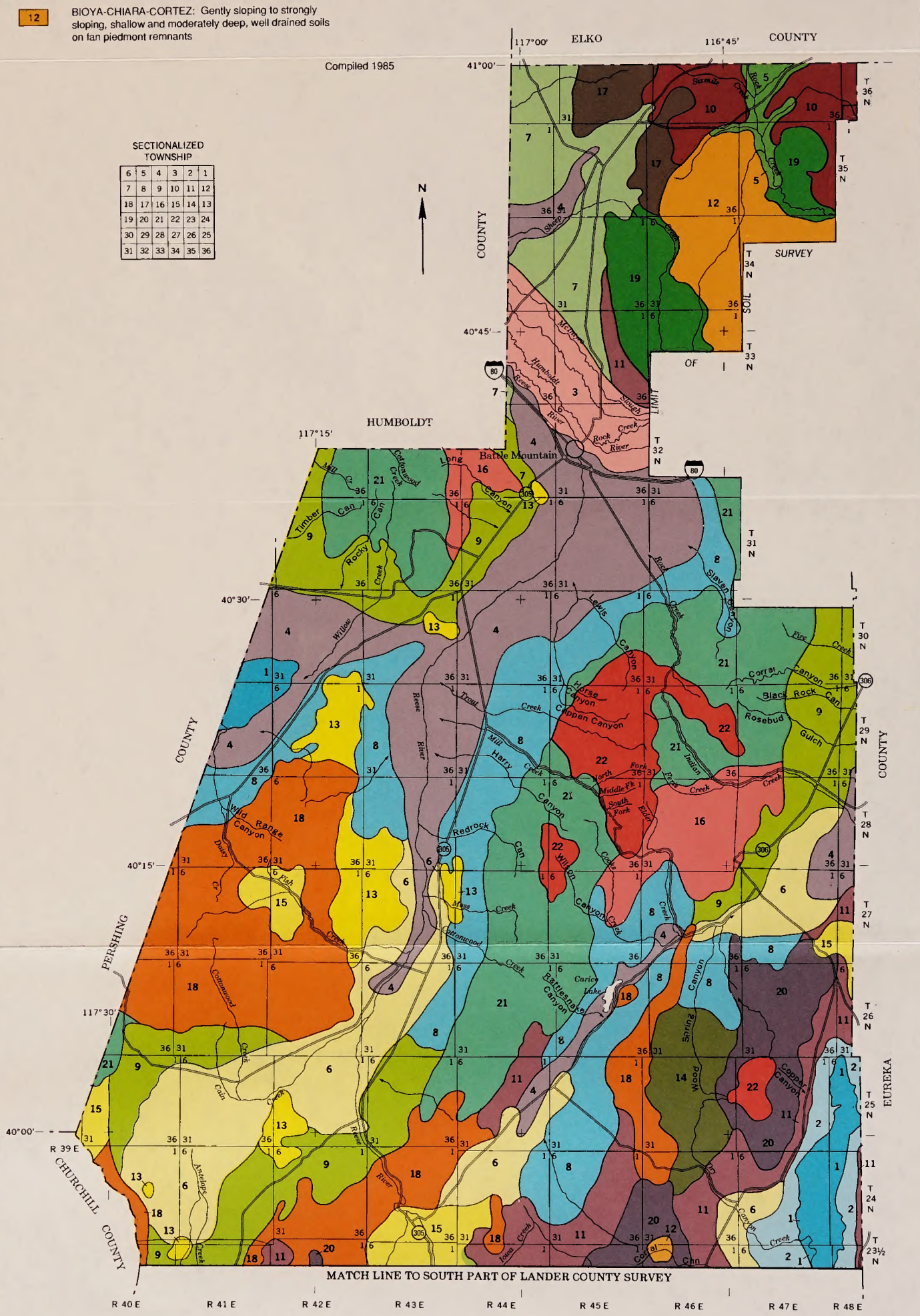
21 QUARZ-WALTI-GLEAN: Strongly sloping to steep, moderately deep and deep, well drained soils on high mountains

22 HAPGOOD-SUMINE-CLEAVAGE: Moderately steep to very steep, shallow, moderately deep and very deep, well drained soils on high mountains

Compiled 1985

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36



UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
UNIVERSITY OF NEVADA AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

LANDER COUNTY, NEVADA
NORTH PART

Scale 1:380,160

1 0 1 2 3 4 5 6 Miles

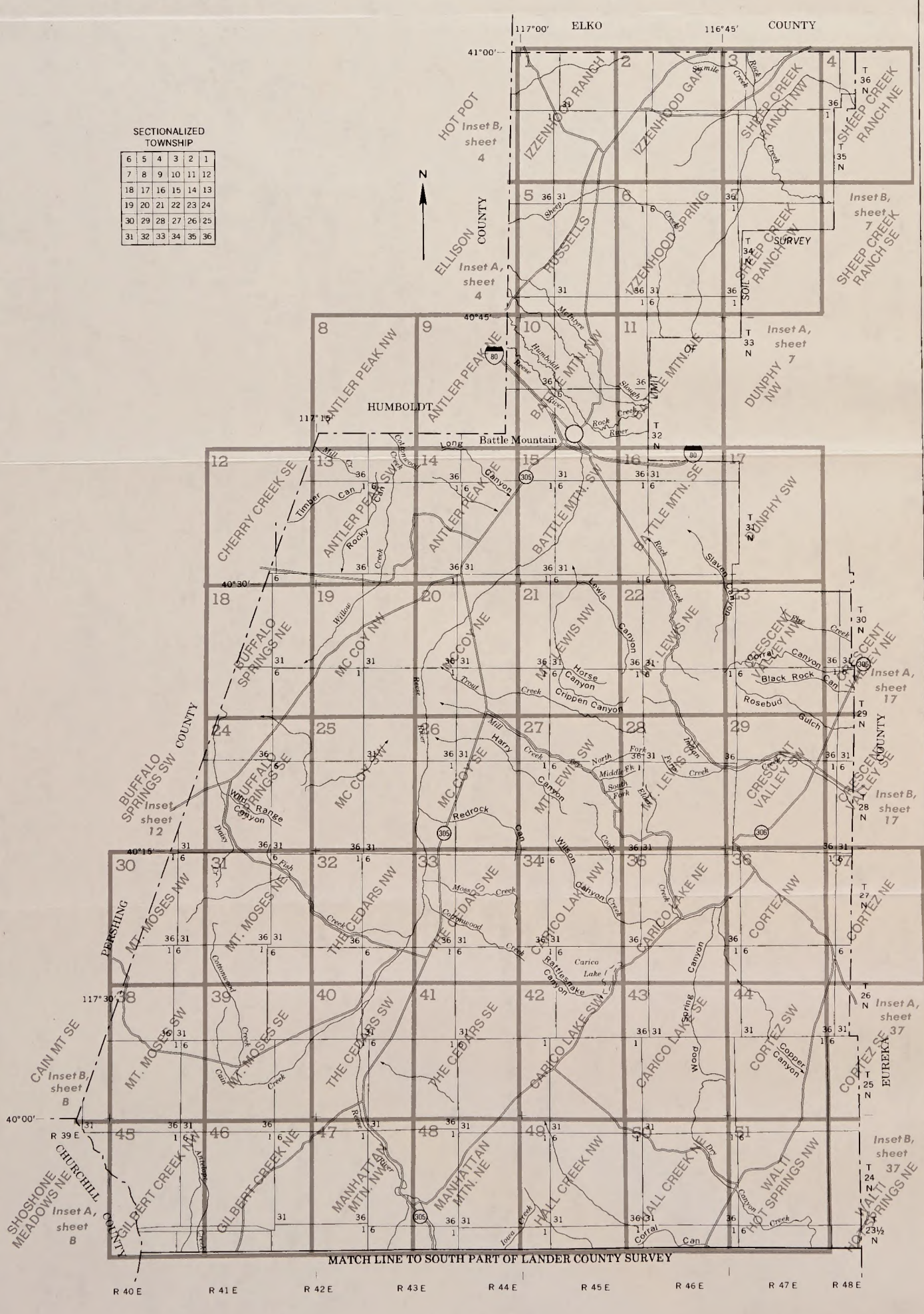
1 0 6 12 Km

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

for decisions on the use of specific tracts.

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36



INDEX TO MAP SHEETS

LANDER COUNTY, NEVADA
NORTH PART

Scale 1:380,160

1 0 1 2 3 4 5 6 Miles

1 0 6 12 Km

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

LANDER COUNTY, NEVADA
NORTH PART

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
UNIVERSITY OF NEVADA AGRICULTURAL EXPERIMENT STATION

SOIL LEGEND

SYMBOL	NAME
102	Beowawe Variant-Tomera-Whirlo association
112	Millerlux-Reluctan-Cleavage association
120	Alyan-Graley-Rock outcrop association
130	Alley-Dewar association
131	Alley-Rock outcrop-Rubble land association
140	Antel silt loam *
141	Antel silt loam, moderately sodic *
142	Antel silty clay loam *
143	Antel silty clay loam, occasionally flooded *
150	Argenta very fine sandy loam *
152	Argenta-Sonoma complex *
160	Batan fine sandy loam *
161	Batan silt loam *
162	Batan silt loam, occasionally flooded *
163	Batan silt loam, slightly saline *
164	Batan-Ragian-Rosney association
166	Batan-Wendane-Sonoma association
167	Batan-Wendane-Valmy association
168	Batan-Bubus-Ocala association
169	Batan-Ocala-Ocasi, rarely flooded, association
170	Beoska silt loam, 0 to 2 percent slopes *
171	Beoska silt loam, 2 to 8 percent slopes *
172	Beoska-Tenabo silt loams, nearly level *
173	Beoska-Tenabo silt loams, sloping *
174	Beoska-Chiara association
175	Beoska-Jenor association
177	Beoska-Oxcorel-McConnel association
178	Beoska-Maipais-Old Camp association
181	Beoska-Orovada association
182	Beoska-Whirlo-Misad association
183	Beoska-Dewar-Orovada association
185	Beowawe silt loam *
192	Vanwyper-Trunk-Trunk, steep, association
193	Berning-Alley association
200	Sonoma Variant silt loam *
202	Bloya-Chiara-Cortez association
203	Bloya-Shabliss-Puett association
211	Blacka very fine sandy loam, 0 to 2 percent slopes *
212	Blacka-Broyles very fine sandy loams, 2 to 8 percent slopes
213	Blacka-Broyles very fine sandy loams, saline, 2 to 4 percent slopes *
220	Blackhawk very fine sandy loam, 2 to 8 percent slopes
230	Broyles very fine sandy loam, 0 to 2 prcent slopes
231	Broyles very fine sandy loam, 2 to 4 percent slopes *
232	Broyles very fine sandy loam, cemented substratum, 0 to 2 percent slopes *
233	Broyles very fine sandy loam, moderately saline, 0 to 2 percent slopes *
235	Broyles-Creemon association
237	Broyles-Beoska-Orovada association
240	Bubus very fine sandy loam *
242	Bubus very line sandy loam, gravelly substratum *
243	Bubus-Playas complex *
244	Bubus-Relley complex *
245	Bubus-Needle Peak-Yipor association
247	Bubus-Lsolde association
248	Bubus-Batan-Reese association
251	Bucan-Bucan,steep association
252	Bucan-Humdun-Rock outcrop association
262	Chen-Staven-Chen, coboly, association
272	Cherry Sprint-Enko association
282	Chiara-Orovada association
283	Chiara-Tenabo association
284	Chiara-Dewar association
285	Chiara-Trunk-Midraw association
286	Chiara-Jenor association
290	Creemon silt loam, 0 to 2 percent slopes *
291	Creemon silt loam, 2 to 4 percent slopes *
292	Creemon silt loam, 0 to 2 percent slopes, occasionally flooded *
293	Creemon silt loam, strongly saline, 0 to 2 percent slopes *
294	Creemon-Orovada-Broyles association
295	Creemon-Cren association
296	Creemon-Hessing association
297	Creemon-Orovada-Tulase association
298	Creemon-Misad association
300	Cren silt loam *
303	Cren-Doowak-Relley association
304	Cren-Ragian-Balan association
310	Davey fine sandy loam *
312	Davey fine sandy loam, cemented substratum *
313	Davey-Goldrun complex *
340	Dufter very fine sandy loam *
370	Enko fine sandy loam, 2 to 8 percent slopes
371	Enko-Shabliss-Orovada association
400	Glean-Watt-Cleavage association
411	Golconda-Blackhawk association
412	Golconda-Dun Glen association
413	Golconda-Blowout land complex
420	Goldrun fine sand, 0 to 4 percent slopes *
422	Goldrun-Old Camp association
441	Gund-Umberland association
442	Gund-Bubus-Wendane association
443	Gund-Batan association
461	Hapgood-Packer-Layview association
466	Hapgood-Tusel-Winada association
467	Hapgood-Sumine-Cleavage association
482	Humdun-Havington-Bucan association
486	Havington-Burrita association
511	Hessing silt loam *
512	Hessing-Relley association
530	Humboldt fine sandy loam *
531	Humboldt silty clay *
532	Humboldt silty clay loam, slightly saline *
571	Jenor-Blacks very fine sandy loams *
573	Jenor-Beoska Broyles association
590	Landco silt loam *
602	Misad gravelly sandy loam, strongly saline-sodic *
605	Misad-Creemon-Redrik association
631	McConnel-Tulase association
660	Needle peak silt loam, occasionally flooded *
670	Fillran-Pineval-Kingingham association
680	Skullwak-Umberland-Wendane association
684	Ocala silt loam, occasionally flooded *
700	Orovada fine sandy loam, 0 to 2 percent slopes *
701	Orovada fine sandy loam, 2 to 4 percent slopes *
702	Orovada fine sandy loam, cemented substratum, 0 to 2 percent slopes *
703	Orovada-Goldrun complex *
704	Orovada-Kodra-Puett association
705	Orovada-Creemon complex *
706	Orovada-Wieland-Chiara association
707	Orovada-Goldrun association
708	Orovada-Reina-Rock outcrop association
709	Orovada-Sodhouse association
711	Paranet silty clay loam *
713	Paranet silty clay loam, drained *
714	Paranet silty clay loam, occasionally flooded *
731	Yipor silt loam, moderately saline-sodic *
740	Playas
770	Pride silt loam *
774	Pride-Sonoma silty clay loams *
780	Pumper silt loam *
800	Ragian silt loam, gravelly substratum *
804	Ragian silty clay loam, moderately saline *
805	Ragian silt loam *
814	Quarz-Linrose-Staven association
816	Quarz-Linrose-Cleavage association
830	Reese silt loam *
835	Reese-Ocala association
841	Werndane-Variant silt loam *
850	Relley silt loam *
851	Relley silt loam, cemented substratum *
852	Relley silt loam, strongly saline *
853	Relley silty clay loam *
855	Relley-Broyles association
861	Rixie silty clay loam, strongly saline *
862	Rixie silty clay loam, drained, strongly saline *
863	Rixie-Rixie, sodic, complex
864	Rixie silty clay loam *
870	Roca-Bregar-Linrose association
872	Roca-Linrose-Wiskari association
873	Roca-Reluctan association
875	Roca-Glean-Bregar association
881	Rose Creek silt loam, drained, strongly saline *
882	Rose Creek silty clay loam *
883	Rose Creek-Paranet silty clay loams *
891	Rosney loam, cemented substratum *
892	Rosney silt loam *
971	Soolake very fine sandy loam, 2 to 8 percent slopes *
972	Soolake-Durphy-Argenta association
980	Sombrero very fine sandy loam *
990	Sonoma silt loam, drained *
991	Sonoma silt loam, drained, slightly saline *
992	Sonoma silt loam, strongly saline, rarely flooded *
993	Sonoma silty clay loam, frequently flooded *
994	Sonoma silty clay loam, drained, strongly saline, occasionally flooded *
995	Sonoma silty clay loam, strongly saline, occasionally flooded *
996	Sonoma, strongly saline-Sonoma complex *
997	Sonoma silty clay loam, strongly saline, frequently flooded *
1021	Sutsie Creek-Millerlux association
1031	Teman silt loam *
1032	Teman silt loam, clayey substratum *
1033	Teman silt loam, strongly saline *
1040	Tenabo, gravelly-Allo-Tenabo association
1041	Tenabo-Ricert association
1042	Tenabo very gravelly loam, 2 to 8 percent slopes
1062	Tornera-Snapp-Whirlo association
1080	Trunk-Burita association
1082	Trunk-Reina association
1084	Trunk-Burrita-Rock outcrop association
1085	Trunk-Dewar-Stingdorn association
1086	Trunk-Maipais-Minat association
1087	Trunk-Burrita-Colbar association
1091	Tulase silt loam, 2 to 8 percent slopes
1092	Tulase-Bubus-McConnel association
1102	Tweba very fine sandy loam, drained, 0 to 4 percent slopes *
1110	Umberland silty clay loam, ponded *
1140	Werndane silt loam, frequently flooded *
1141	Werndane silt loam, sandy substratum *
1142	Werndane-Tweba association
1143	Werndane silt loam, occasionally flooded *
1144	Werndane-Batan-Broyles association
1145	Werndane-Playas association
1146	Werndane-Sonoma-Valmy association
1150	Wesa fine sandy loam *
1158	Whirlo very fine sandy loam, 2 to 4 percenr slopes, occasinally flooded *
1160	Whirlo gravelly loam, 2 to 8 percent slopes
1162	Whirlo silt loam, 0 to 2 percent slopes *
1163	Whirlo silt loam, 2 to 4 percent slopes *
1165	Whirlo-Creemon association
1166	Whirlo-Rumper silt loams *
1168	Whirlo-Oxcorel association
1169	Whirlo-Broyles association
1170	Wholan silt loam *
1174	Wholan silt loam, sandy substratum *
1177	Wholan, strongly alkaline-Rasille association
1178	Wholan-Rasille association
1201	Slaven-Linrose-Cleavage association
1202	Slaven-Wiskan-Graley Variant association
1203	Slaven-Glean-Cleavage association
1212	Wiskan-Roca-Bregar association
1215	Wiskan-Locane association
1216	Wiskan-Linrose association
1220	Boullat-Havington-Dewar association
1221	Boullat-Colbar-Old Camp association
1240	Redflame-Kingingham association
1263	Graley-Loncan-Bregar association
1280	Ricart-Oxcorel-Whirlo association
1281	Ricert-Whirlo-Pineval association
1283	Ricert-Kinginghom-Oxcorel association
1291	Kingingham-Tenabo-Sodhouse association
1292	Kinginghom-Golconda-Whirlo association
1293	Kinginghom-Oxcorel association
1294	Kinginghom-Whirlo-Beoska association
1342	Doowak, cobbly Doowak-Veta association
1392	Rock outcrop-Loncar-Variant-Glean association
1400	Koynik, steep-Koynik-Rock outcrop association
1410	Bojo-Stingdorn association
1411	Bojo-Rock outcrop-Osoli association
1412	Bojo-Humdun-Boullat association
1420	Sumine-Reluctan-Cleavage association
1421	Sumine-Sottscrabble-Watt association
1422	Sumine-Hapgood-Cleavage association
1423	Sumine-Chen-Rock outcrop association
1425	Sumine-Loncan association
1426	Sumine-Cleavage-Loncan association
1427	Sumine-Itca-Sotscrabole association
1428	Sumine-Rubble land-Cleavage association
1429	Sumine-Winada Variant-Perrnty association
1450	Allow, steep-Atlow-Stingdom association
1451	Atlow-Reluctan-Trunk association
1452	Atlow-Minat-Old camp association
1453	Allow-Colbar-Rock outcrop association
1532	Cleavage-Rubble land-Bregar association
1542	Linrose-Cleavage-Perrnty association
1570	Koynik-Variant-Oxcorel-Whirlo association
1600	Dumps and Pits, mine *
1601	Pits, Gravel
1662	Floer-Slaven-Roca association
1670	Wieland-Allor association
1671	Wieland-Oxcorel-Allor association
1673	Wieland-Grassval-Puett association
1680	Zineb gravelly loam, 2 to 8 percent slopes
1682	Zineb-Doowak-Oxcorel association
2060	Oxcorel-Beoska-Whirlo association
2061	Oxcorel-Whirlo-Dun Glen association
2062	Oxcorel-Orovada association
2064	Oxcorel-Misad association
2065	Oxcorel-Oxcorel, moderately steep-Pineval association
2066	Oxcorel-Broyles-Dun Glen association
2067	Oxcorel-Colbar-Stingdorn association
2068	Oxcorel-Golconda-Whirlo association
2069	Oxcorel-Redrik-Veta association
2090	Punchbowl-Robson-Reluctan association
2091	Punchbowl-Teguro-Sumine association
2092	Punchbowl-Belate-Reluctan association
2094	Punchbowl-Jung-Locane association
2098	Punchbowl-Clanapine-Sumine association
2099	Punchbowl-Roca-Rock outcrop association
2100	Grassval-Grina-Unsel Variant association
2104	Grassval-Zineb-Izod association
2521	Stingdorn very cobby loam, 4 to 30 percent slopes
2522	Stingdorn-Stingdom, steep-Colbar association
2530	Penvick-Puett-Tulase association
2540	Bufferan-Wieland association
2541	Bufferan-Zoesta association
2550	Laped-Old camp-Colbar association
2552	Laped-Old Camp-Puett association
2553	Laped-Stingdorn-Colbar association
2555	Laped-Colbar association
2561	Puett-Genaw-Orovada association
2571	Colbar, steep-Burrita-Colbar association
2573	Colbar-Midraw association
2575	Colbar-Perwick-Settlemeyer association
2591	Oxoll Variant-Oxcorel association
2600	Grina Canlwe-Handy association
2602	Grina-Grina, eroded-Canlwe association
2620	Handy-Canlwe-Zoesta association
2621	Handy, gravelly-Handy-Zoesta association
2631	Midraw-Minat-Pineval association
2640	Rasille-Kelk association
2652	Malpais-Stingdorn association
2670	Zoesta Variant-Jung-McVegas association
2681	Tessilin-Puett-Grina association
2711	Burrita-Burmborough association
2712	Burrita-Alley-Newpass association
2721	Burmborough-Sumine-Burrita association
2760	Giner-Burrita-Burrita, south aspect, association
2771	Kram-Hopeka-Rock outcrop association
2783	Desatoya, steep-Spike-Desatoya association
2790	Old Camp-Minat-Osoli association
2791	Old Camp-Colbar-Rock outcrop association
2793	Old Camp-Laped association
2794	Old Camp-Kram Variant-Rock outcrop association
2796	Old Camp-Osoli-Colbar association
2797	Old Camp, steep-Colbar-Old Camp association
2798	Old Camp-Allow-Osoli association
2800	Old Camp-Watt-Sottscrabble association
2801	Old Camp-Rock outcrop-Colbar association, sirongly sloping
2802	Old Camp-Rock outcrop-Colbar association, steep
3071	Allor-Wieland association
3111	Ninemile-Zoesta-Itca association
3121	Watt-Sottscrabole-Bucan association
3122	Watt-Sumine-Sottscrabble association
3127	Watt-Cleavage-Sottscrabble association
3134	Itca-Clanalpine-Sumine association
3150	Robson-Wiskan association
3152	Robson-Reluctan association
3156	Robson-Old Camp-Rock outcrop association
3203	Dewar-Sodhouse-Bojo association
3410	Zoesta-Wieland-Akerue association
3413	Zoesta-Reluctan association
3415	Zoesta-Handy association
3417	Zoesta-Loncan-Welch association
3420	Belate-Sumine-Sottscrabble association
3423	Belate-Cleavage-Sottscrabble association
3432	Bregar-Roca-Quarz association
3433	Bregar-Punchbowl association
3451	Reluctan-Robson-Sumine association
3452	Reluctan-Sumine-Colbar association
3453	Reluctan-Locane-Itca association
3455	Reluctan-Roca-Colbar association
3560	Locane-Robson-Bregar association
3561	Locane-Sumine-Glean association
3564	Locane-Zoesta-Bucan association
3621	Minat-Bois-Stingdorn association
3622	Minat-Minat, eroded, association
3624	Minat-Colbar-Allow association
3650	McVegas-Old Camp-Kingingham association
3651	McVegas-Beoska association
3652	McVegas-Stingdorn-Colbar association
3661	Dun Glen-Whirlo association
3690	Izod-Koynik-Rock outcrop association
3691	Izod-Rock outcrop association
3693	Izod-Kbella-Xine association
3740	Kelk silt loam, saline, 0 to 4 percent slopes *
3741	Kelk-Settlemeyer association
3742	Kelk-Ocala association
3840	Jung-Norfork-Bufferan association
3841	Jung-Itca-Roca association
3843	Jung, steep-Robson-Jung association
3845	Jung-Stingdorn-Atlow association
3846	Jung-Wiskan association
3881	Layview-Packer-Happood association
3950	Hoopite-Jung-Izod association
3961	Pinevai-Orovada-Beoska association
3990	Settlemeyer fine sandy loam, drained, 0 to 4 percent slopes *
3992	Settlemeyer, drained-Settlemeyer loams *
4051	Atella-Xine-Kram association
4070	Genaw-Wieland-Grina association
4071	Genaw-Penpr-Puett association
4072	Genaw-Orovada-Puett association
4091	Coztur-Genaw association
4093	Coztur-Teguro-Punchbowl association
4140	Welch loam, drained, 2 to 8 percent slopes

* Narrowly defined

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline and neatline
- AD HOC BOUNDARY (label)
- Small airport, airfield, park, oilfield, cemetery, or flood pool

STATE COORDINATE TICK

LAND DIVISION CORNER (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS

- Interstate (17)
- Federal (175)
- State (9)
- County, farm or ranch (230)

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or Small

PITS

- Grave pit
- Minor quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) — Indian Mound
- Located object (label) — Tower
- Tank (label) — Gas
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
- Double-line (label) — CANAL
- Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial — WATER
- Intermittent — INT

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS — 1021 / 3122

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

SOIL SAMPLE (normally not shown)

MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot — 0 (2)
- Pachic Cryoborolls with Aspen woodland vegetation (1 to 5 acres)
- Sand dunes, up to 5 ac.
- Lithic Haploxerolls with mountainmahogany vegetation (1 to 5 ac.)

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U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 1
LANDER COUNTY, NEVADA, NORTH PART
(IZZENHOOD RANCH QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale · 1:24000

LANDER COUNTY, NEVADA, NORTHERN PART NO. 1

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

#27245151 ID:88075605 S599.N3 L36 1992

SHEET NUMBER 1

LANDER COUNTY, NEVADA, NORTH PART

(IZZENHOOD RANCH QUADRANGLE)

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Denver Federal Center
Bldg. 50, OC-521
P.O. Box 25047
Denver, CO 80225

T. 36 N.

T. 35 N.

(Joins sheet 2)

40°52'30"
117°00'

(Joins sheet 5)

5 000 4 000 3 000 2 000 1 000 0
1 .5 0

Scale - 1:240

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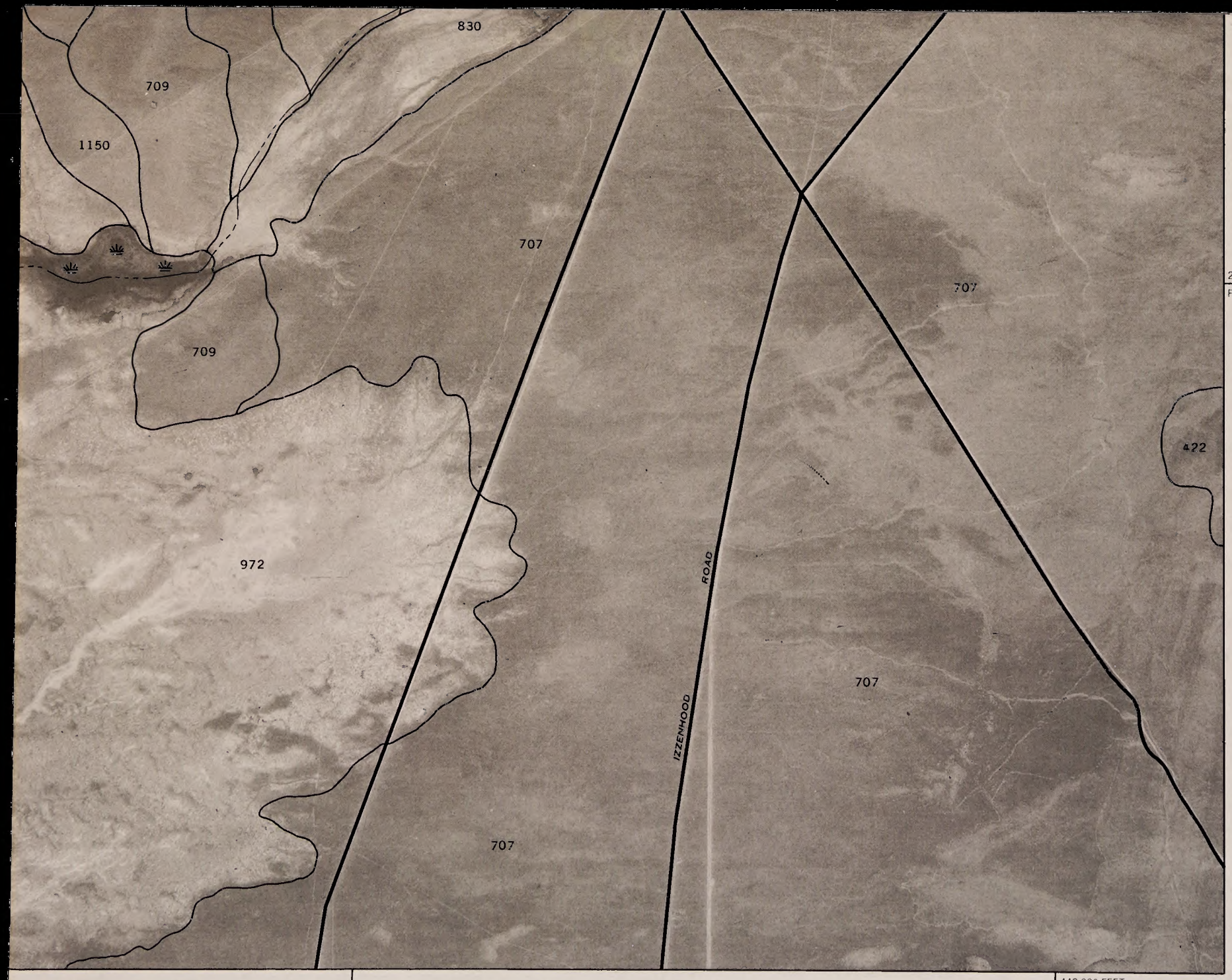
LANDER COUNTY, NEVADA



5000 10000 Feet

1 2 3 Kilometers

00

NORTHERN PART NO. 1

SHEET NO. 1 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 2
LANDER COUNTY, NEVADA, NORTH PART
(IZZENHOOD GAP QUADRANGLE)

This map was compiled by U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies on 1975 orthophotography obtained from U.S. Department of the Interior, Geological Survey.

LANDER COUNTY, NEVADA, NORTHERN PART NO. 2

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 2

LANDER COUNTY, NEVADA, NORTH PART

(IZZENHOOD GAP QUADRANGLE)

40°52'30"
116°52'30"

R. 45 E. | R. 46 E.

(Joins sheet 6)

5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:24

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LANDER COUNTY, NEVADA

5000 10000 Feet

1 2 3 Kilometers

000

NORTHERN PART NO. 2

#27245151 ID: 88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 3
LANDER COUNTY, NEVADA, NORTH PART
(SHEEP CREEK RANGE, NW QUADRANGLE)

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5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale · 1:24 000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 3

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

#27245151 ID: 88075605 S599.N3 L36 1992

SHEET NUMBER 3

LANDER COUNTY, NEVADA, NORTH PART

(SHEEP CREEK RANGE, NW QUADRANGLE)

116° 37'30"

41°00'

Wire Corral Ranch

Creek

1102 203 272 1102 203 272 1102 203 272 1102 1082 272 1102 272 704 704 1423 704

RANGE

T. 36 N.

T. 35 N.

(Joins sheet 4)

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40°52′30″
116°45′

R. 46 E. | R. 47 E.

(Joins sheet 7)

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5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,

5000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 3

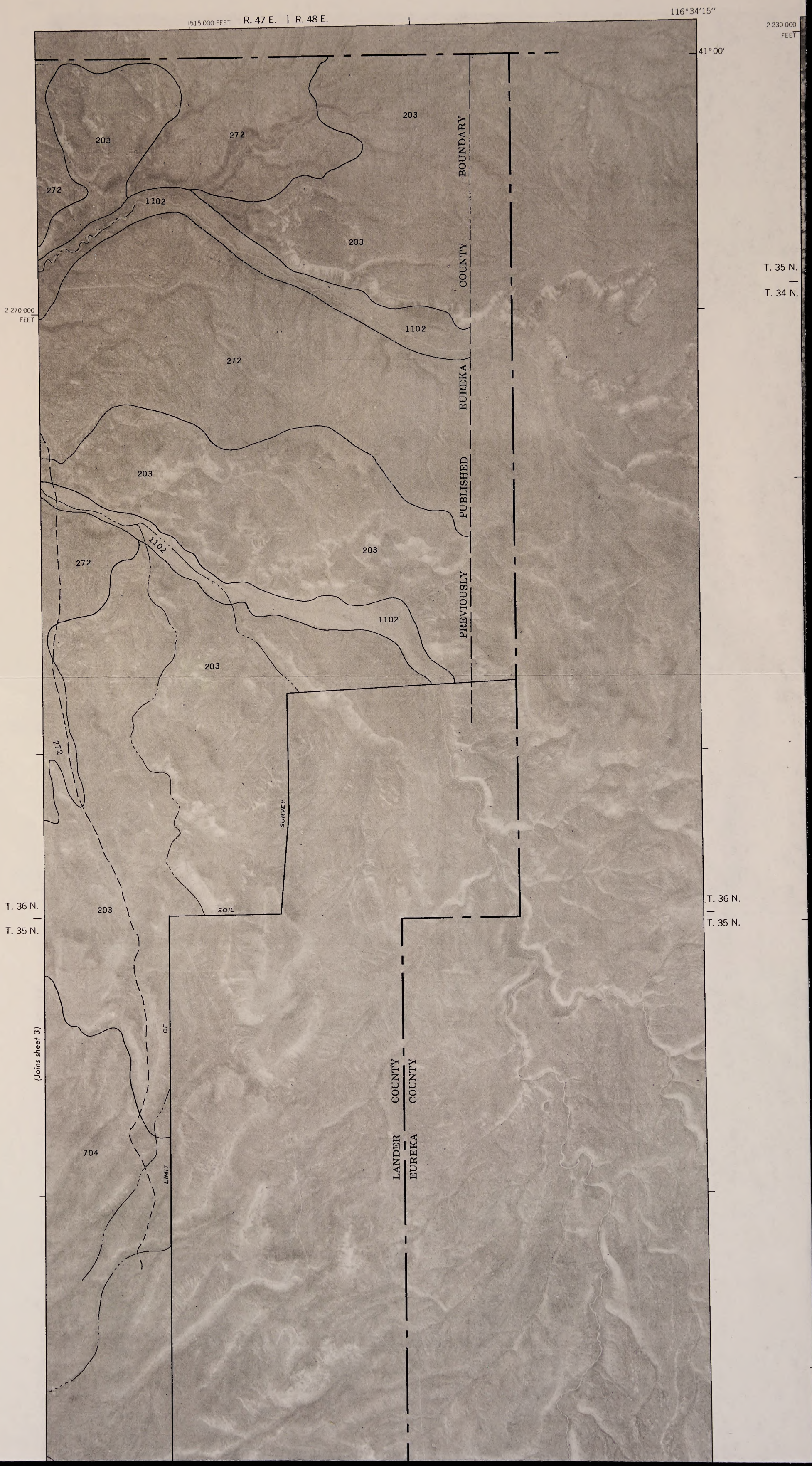
SHEET NO. 3 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 4
LANDER COUNTY, NEVADA, NORTH PART
(SHEEP CREEK RANGE NE, ELLISON AND HOT POT QUADRANGLES)

LANDER COUNTY, NEVADA, NORTHERN PART NO. 4

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



SHEET NUMBER 4

LANDER COUNTY, NEVADA, NORTH PART

(SHEEP CREEK RANGE NE, ELLISON AND HOT POT QUADRANGLES)

INSET A
R. 44 E.
(Joins inset B, lower right)

INSET B
R. 44 E.

400 000 FEET

402 000 FEET

117°00′

40°52′30″

41°00′

ELKO COUNTY

T. 35 N.

T. 34 N.

2 270 000 FEET

T. 36 N.

T. 35 N.

Sheep Creek

McIntyre Slough

WESTERN

HUMBOLDT COUNTY
LANDER COUNTY

(Joins sheet 5)

(Joins sheet 1)

2 240 000
FEET

T. 34 N.

T. 33 N.

40°52'30"
116°37'30"

R. 47 E. | R. 48 E.

(Joins inset B, sheet 7)

520 000 FEET

5000 4000 3000 2000 1000 0

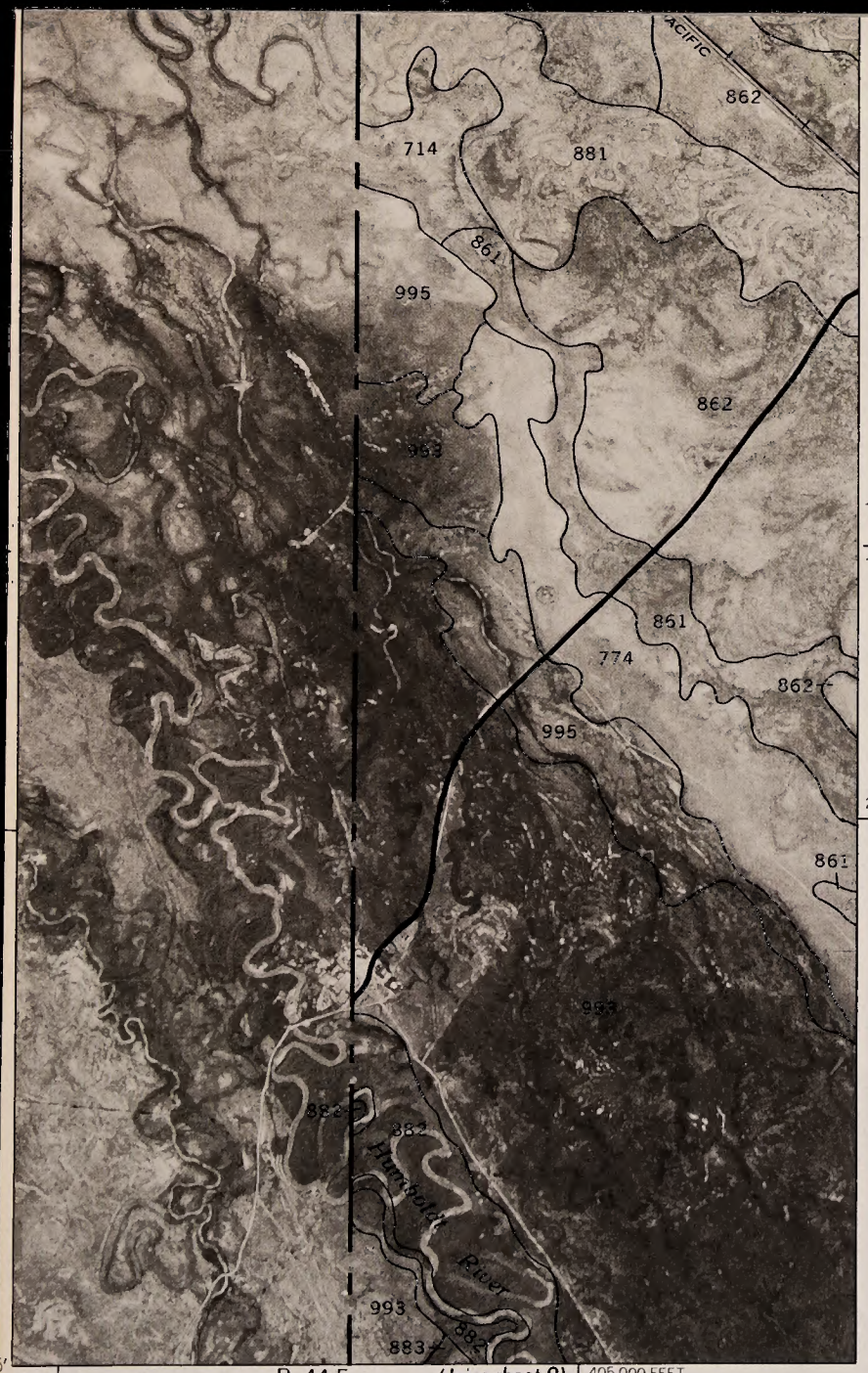
1 .5 0

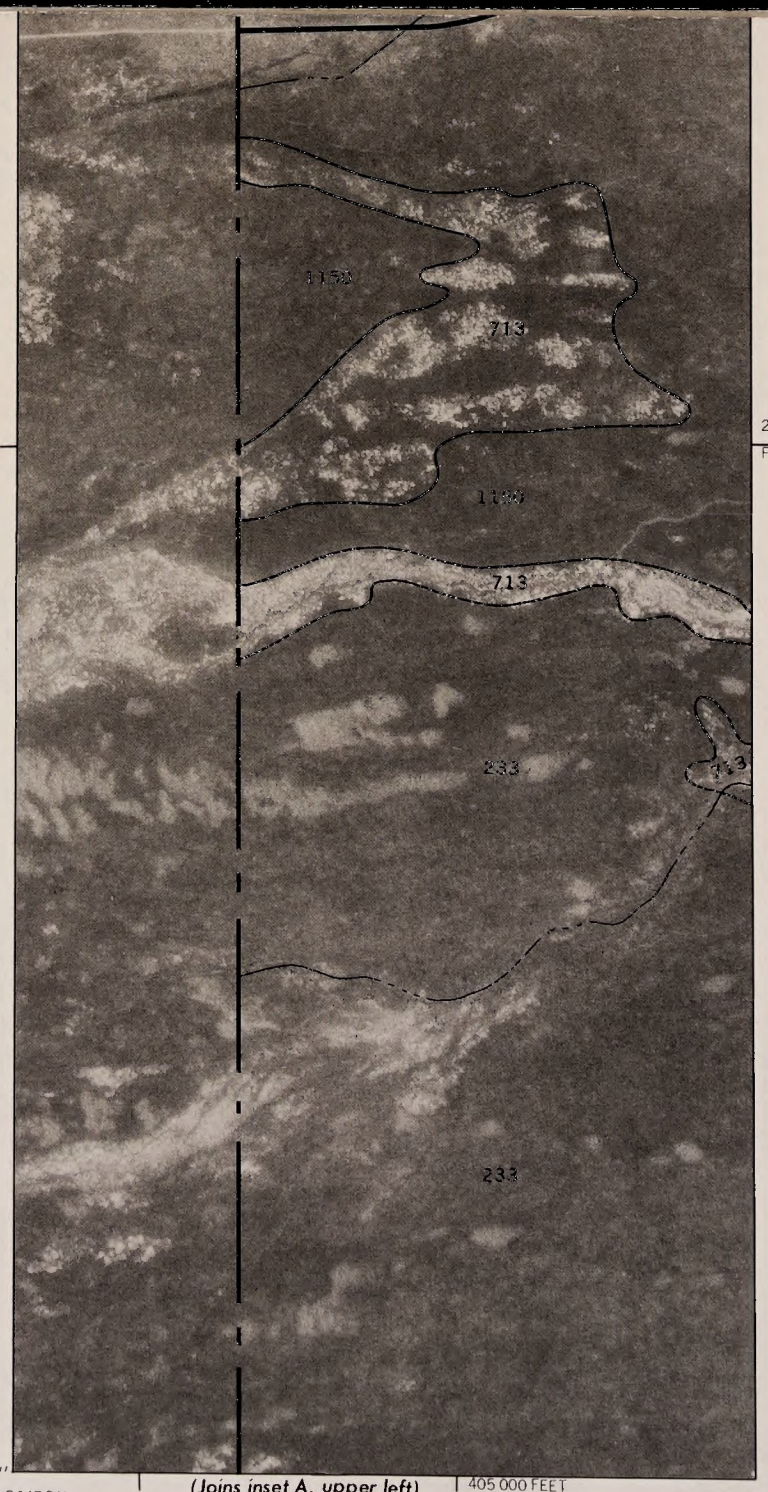
5000 AND 10 000-FOOT GRID TICKS

40° 4
117°

Scale - 1:24

LANDER COUNTY, NEVADA





01'45" R. 44 E. *(Joins sheet 9)* 405 000 FEET

5000 AND 10 000-FOOT GRID TICKS

5000 10000 Feet

1 2 3 Kilometers

000

40°52'30"
117°01'30"

(Joins inset A, upper left) 405 000 FEET

R. 44 E.

3000 AND 10 000-FOOT GRID TICKS

, NORTHERN PART NO. 4

#27245151 ID:98075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 5
LANDER COUNTY, NEVADA, NORTH PART
(RUSSELLS QUADRANGLE)

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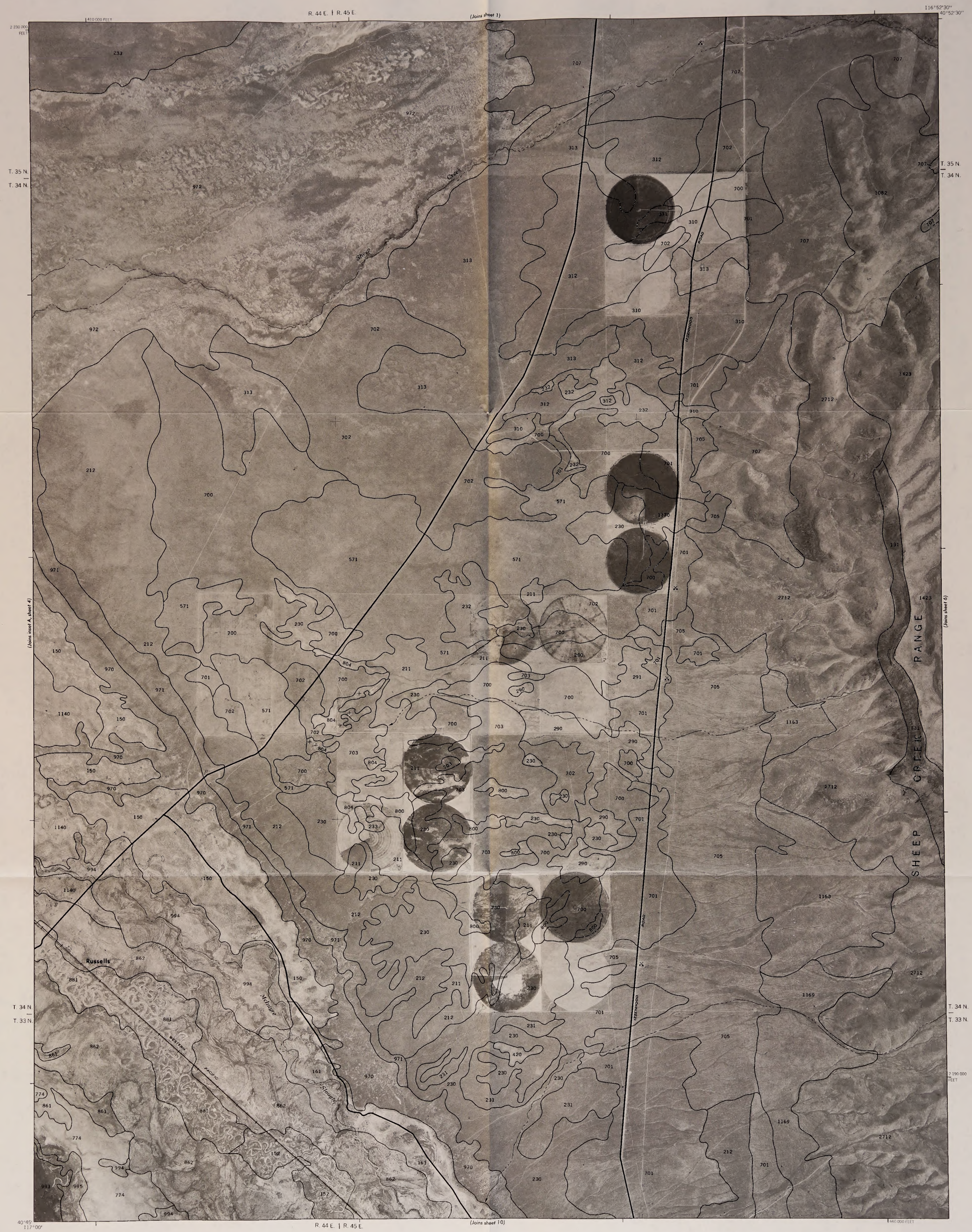

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale · 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 5

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

#27245151 ID: 88075605 S 599 .N3 L36 1992

SHEET NUMBER 5

LANDER COUNTY, NEVADA, NORTH PART

(RUSSELLS QUADRANGLE)

(Sheet 1)

116°52'30"

40°52'30"

T. 35 N.

T. 34 N.

(Joins sheet 6)

IZZENHOOD ROAD

RANGE

SHEEP CREEK

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA.

eet 10)

5000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 5

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 6
LANDER COUNTY, NEVADA, NORTH PART
(IZZENHOOD SPRING QUADRANGLE)

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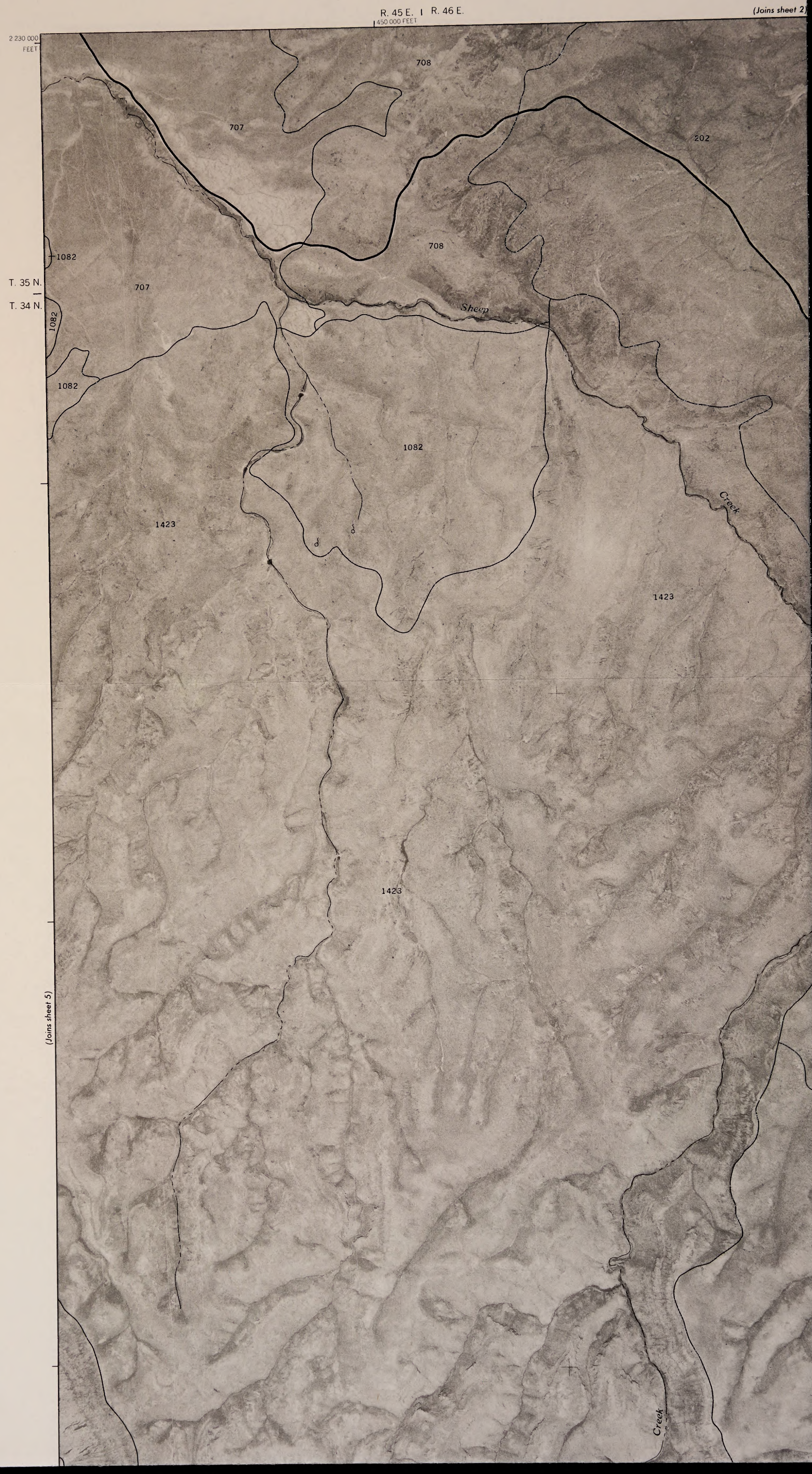
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANOER COUNTY, NEVADA, NORTHERN PART NO. 6

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



SHEET NUMBER 6

LANDER COUNTY, NEVADA, NORTH PART

(IZZENHOOD SPRING QUADRANGLE)

116°45'

40°52'30"

T. 35 N.

T. 34 N.

202

202

Workhorse Butte

202

202

202

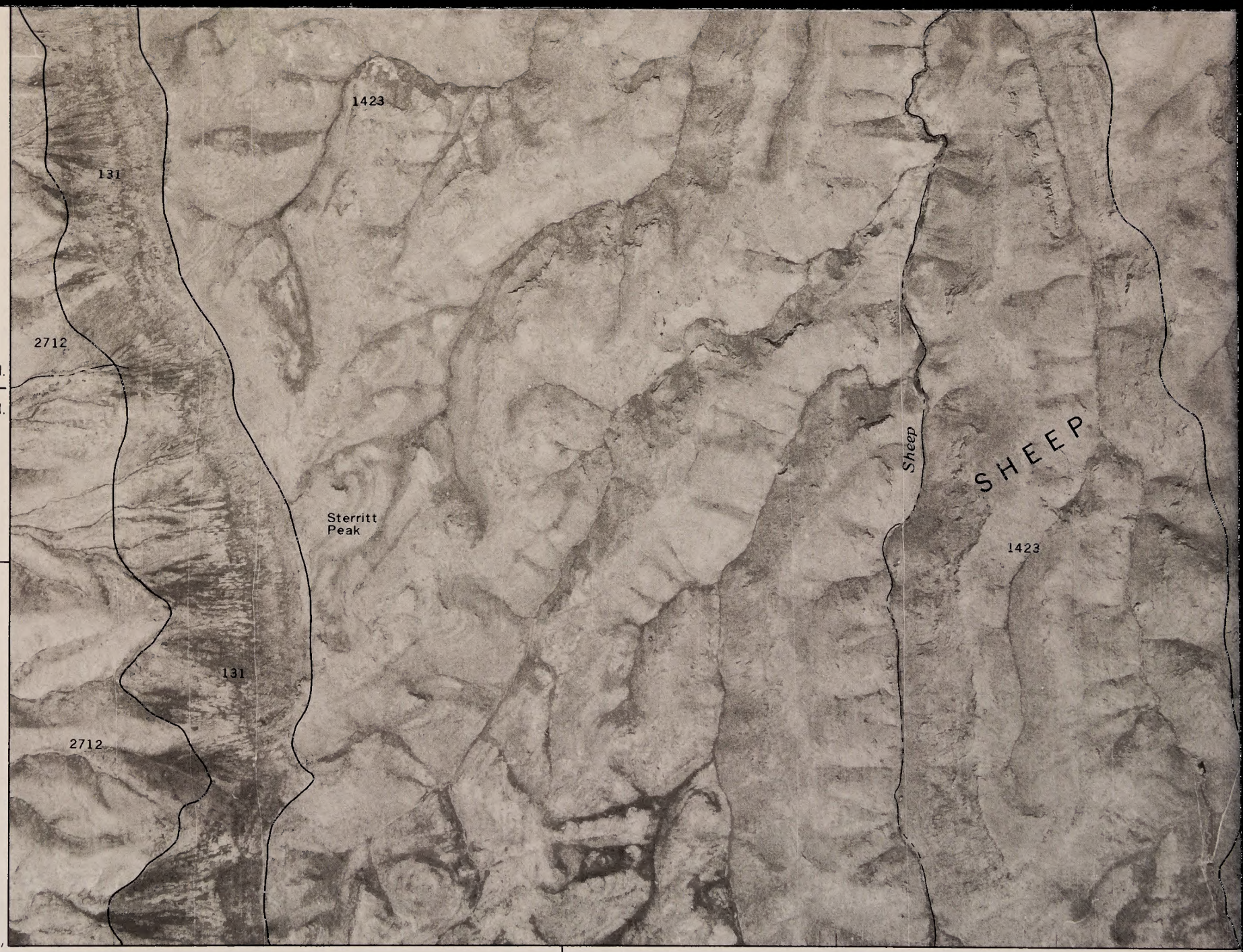
202

262

RANGE

Izzenhood Spring

(Joins sheet 7)



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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

T. 34 N.

T. 33 N.

2 190 000 FEET

1)

470 000 FEET

5000 10000 Feet

1 2 3 Kilometers

000

N

, NORTHERN PART NO. 6

SHEET NO. 6 OF 51

#27245151 ID: 88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 7
LANDER COUNTY, NEVADA, NORTH PART
(SHEEP CREEK RANGE SW, DUNPHY NW
AND SHEEP CREEK RANGE SE QUADRANGLES)

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INSET A

INSET B

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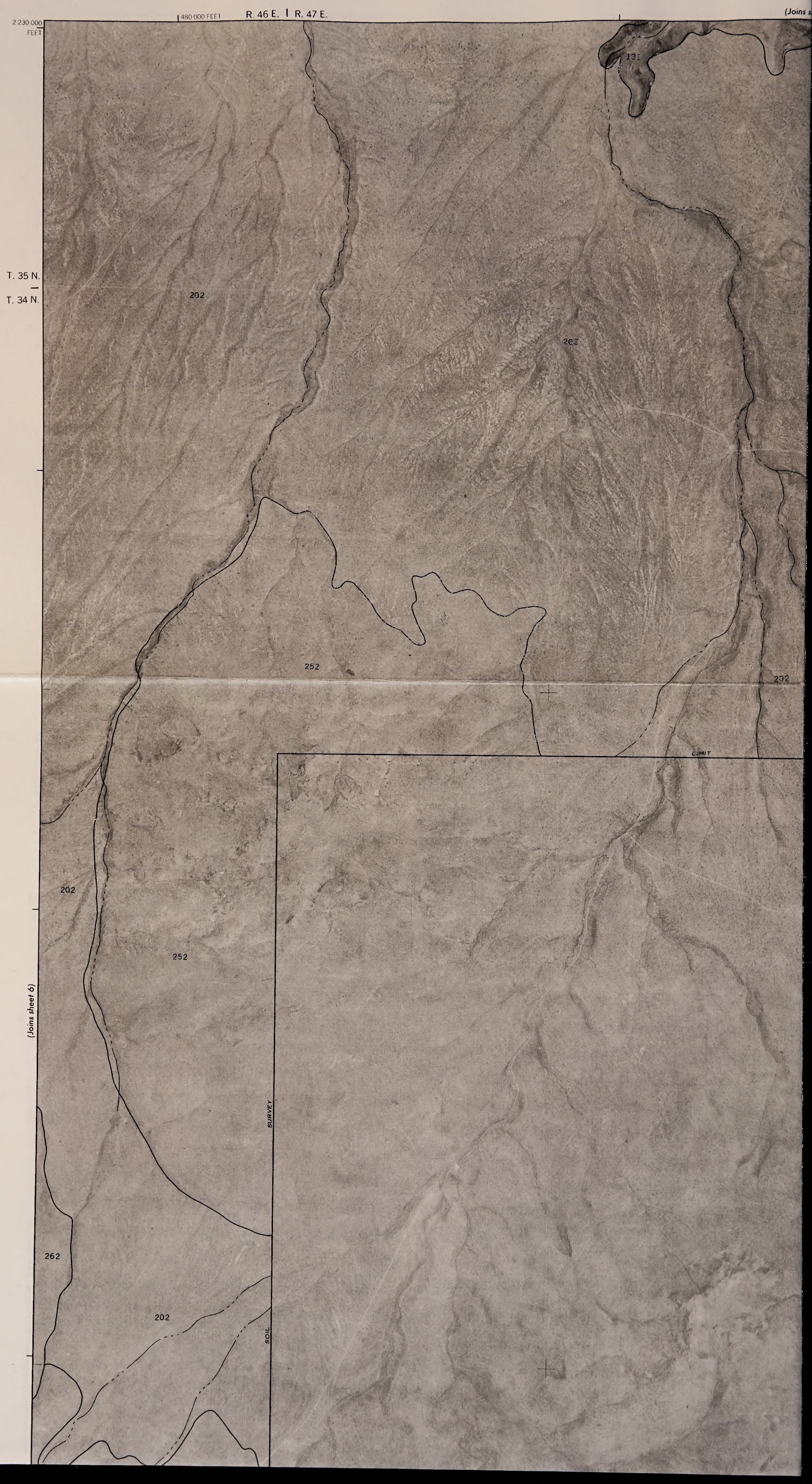
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 7

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



#27245151 ID: 88075605 S 599 .N3 L36 1992

SHEET NUMBER 7

LANDER COUNTY, NEVADA, NORTH PART

(SHEEP CREEK RANGE SW, DUNPHY NW
AND SHEEP CREEK RANGE SE QUADRANGLES)

heet 3)

116°37'30"
40°52'30"

131
704
1423
704
Rock
Creek
131
131
202
202
T. 35 N.
T. 34 N.
(Joins inset B)
251
131
OF SOIL SURVEY

INSET B

(Joins sheet 4)

R. 46 E. | R. 47 E.
197 000 FEET
116°36'30"
40°52'30"
2 230 000 FEET
704
SURVEY
Rock Creek
131
T. 35 N.
T. 34 N.
T. 35 N.
T. 34 N.
right)

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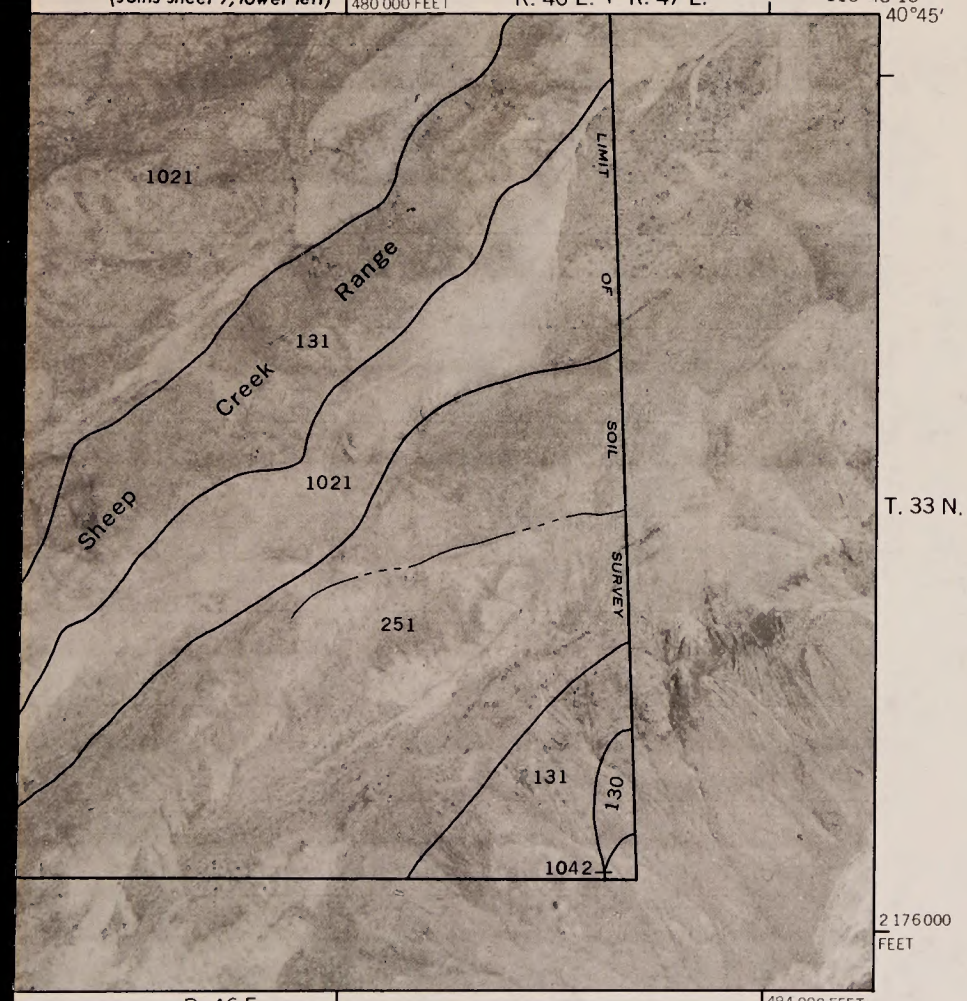
5000 4000 3000 2000 1000 0

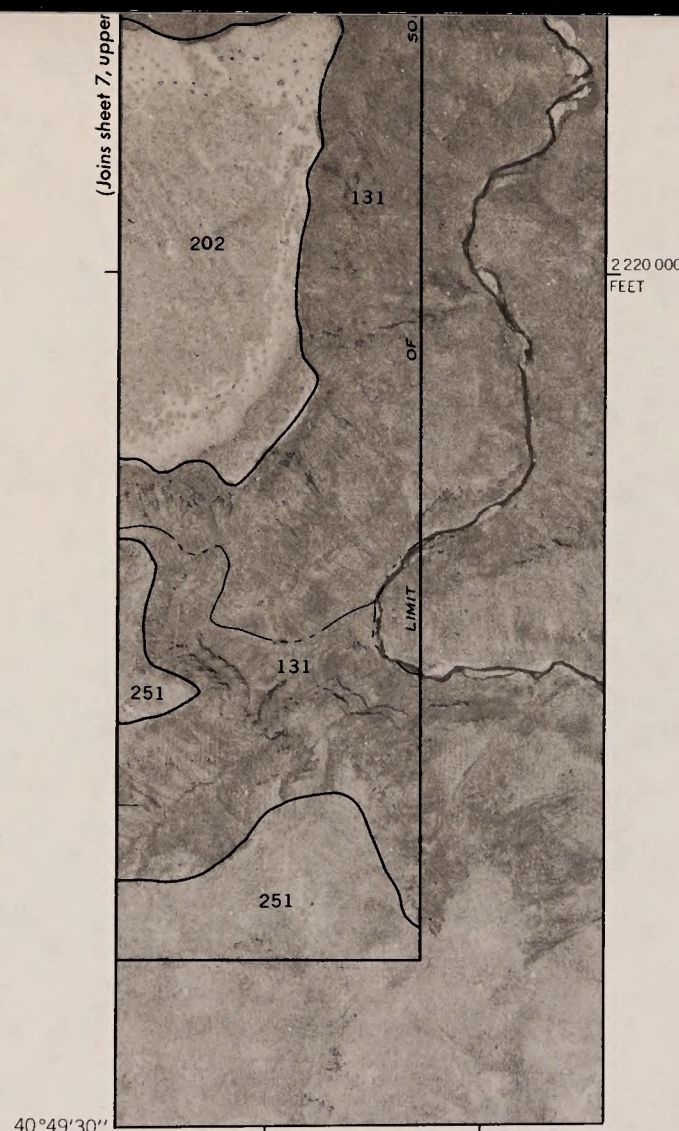
1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA

INSET A





T. 34 N.

T. 33 N.

2 190 000 FEET

510 000 FEET

5000 10000 Feet

1 2 3 Kilometers

000

N

NORTHERN PART NO. 7

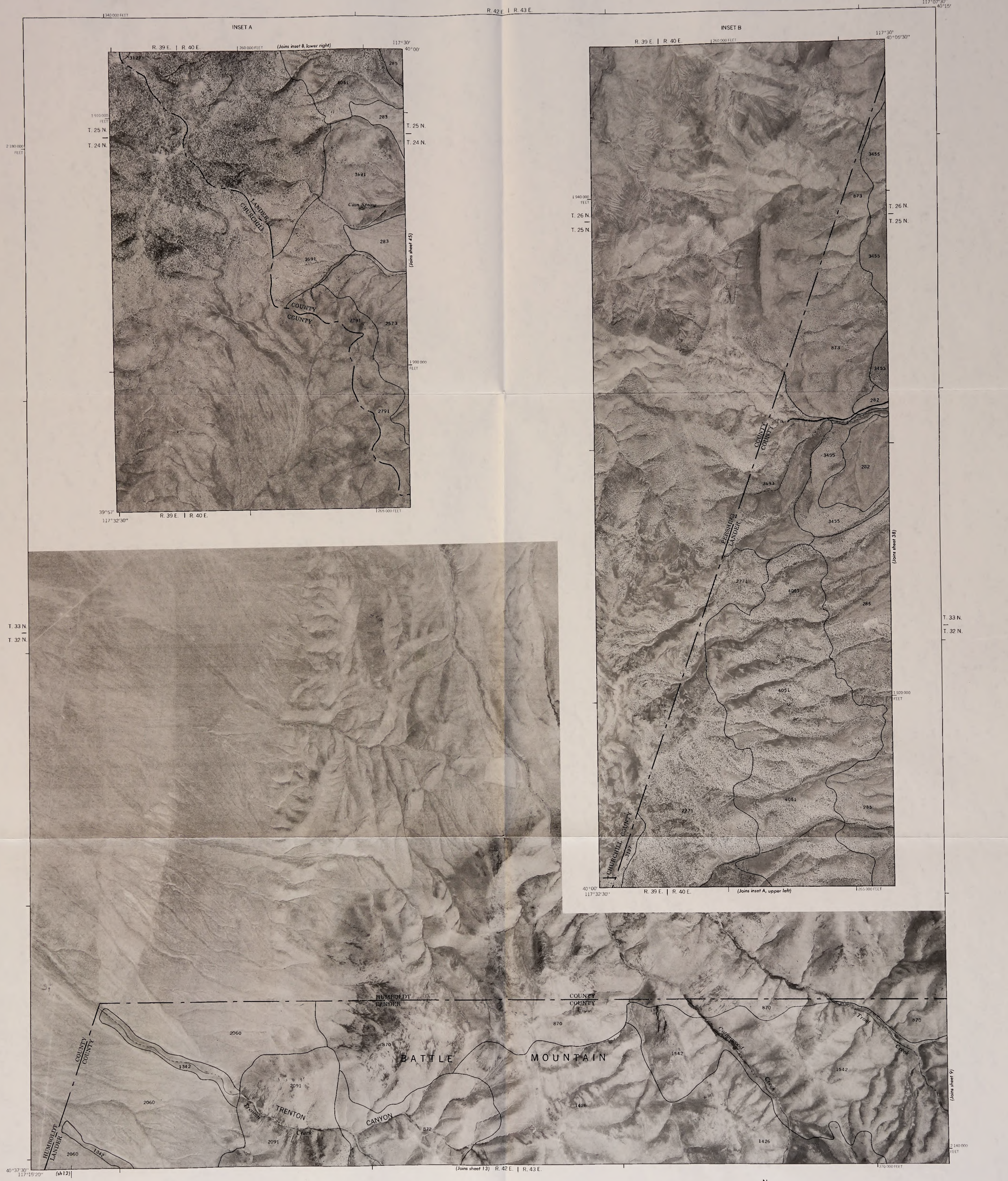
SHEET NO. 7 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 8
LANDER COUNTY, NEVADA, NORTH PART
(ANTLER PEAK NW, CHERRY CREEK NE
SHOSHONE MEADOWS NE AND CAIN MTN SE QUADRANGLES)

INSET A

INSET B



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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 8

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

INSET A

SHEET NUMBER 8

LANDER COUNTY, NEVADA, NORTH PART

(ANTLER PEAK NW, CHERRY CREEK NE
SHOSHONE MEADOWS NE AND CAIN MTN SE QUADRANGLES)

R. 43 E.

117°07'30"
40°15'

INSET B

R. 39 E. | R. 40 E.

260 000 FEET

117°30'
40°05'30"

1 940 000 FEET

T. 26 N.

T. 25 N.

T. 26 N.

T. 25 N.

3455

873

3455

873

3455

282

COUNTY
COUNTY

3693

3455

282

3455

PERSHING
LANDER

2771

4051

285

(Joins sheet 38)

T. 33 N.

T. 32 N.

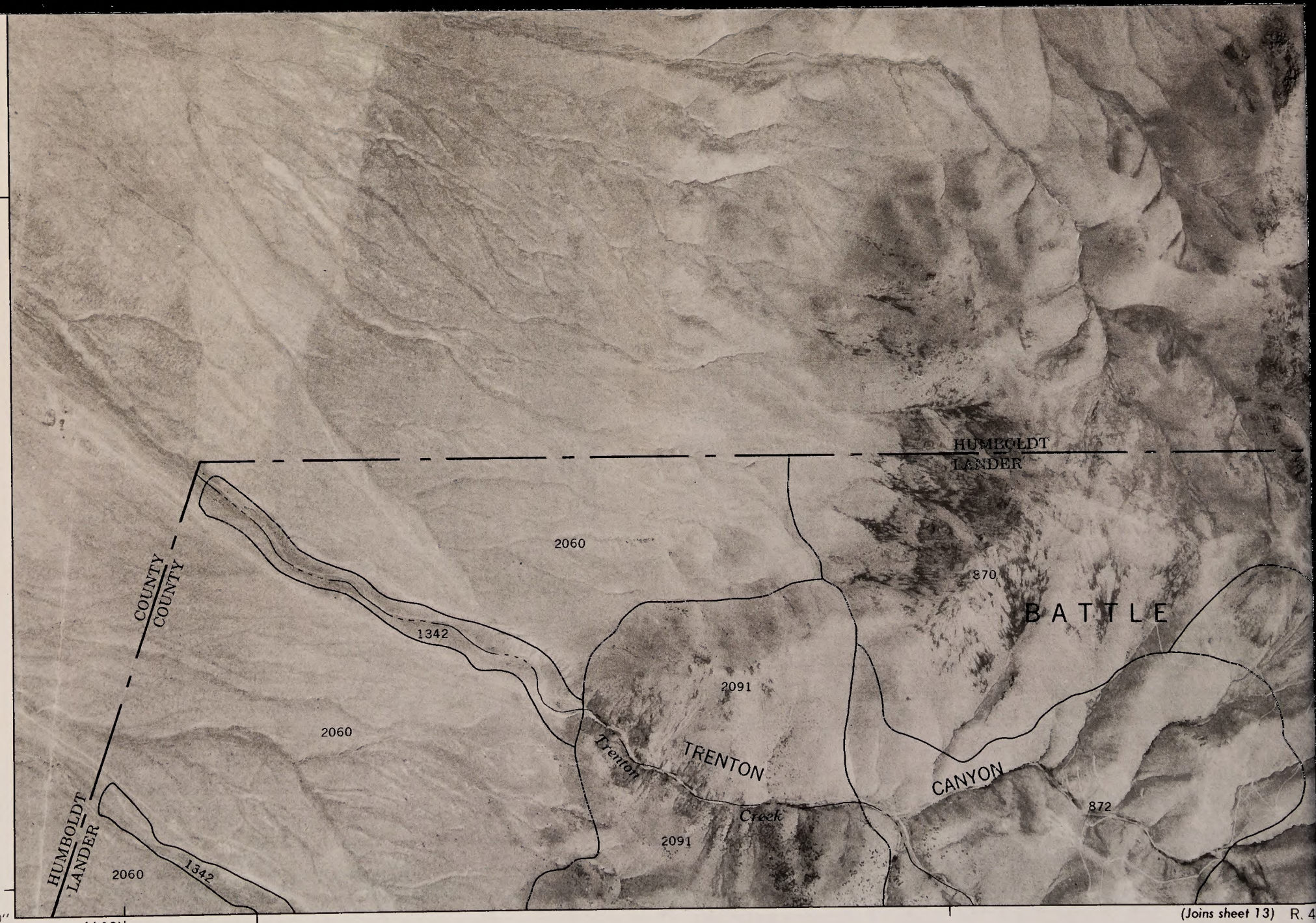
1 920 000 FEET

4051

2771

COUNTY

285



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5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

2 E. | R. 43 E.

5000 10000 Feet

1 2 3 Kilometers

000

N

. NORTHERN PART NO. 8

#27245151 ID:88075605 S599.N3L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 9
LANDER COUNTY, NEVADA, NORTH PART
(ANTLER PEAK NE QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 9

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

330 000 FEET

2 180 000
FEET

T. 33 N.

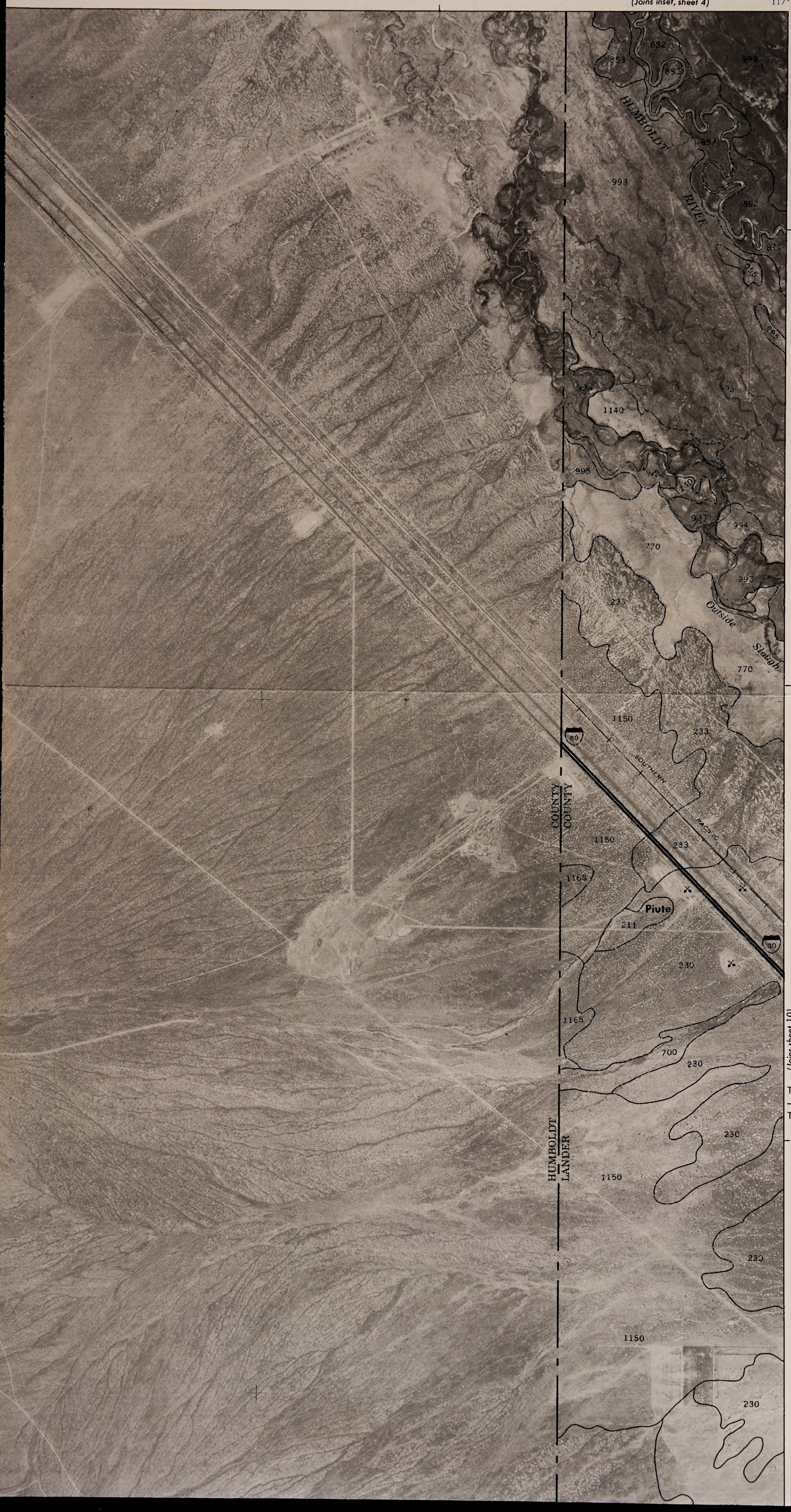
T. 32 N.

#27245151 ID:88075605 S599.N3L36 1992

SHEET NUMBER 9

LANDER COUNTY, NEVADA, NORTH PART

(ANTLER PEAK NE QUADRANGLE)



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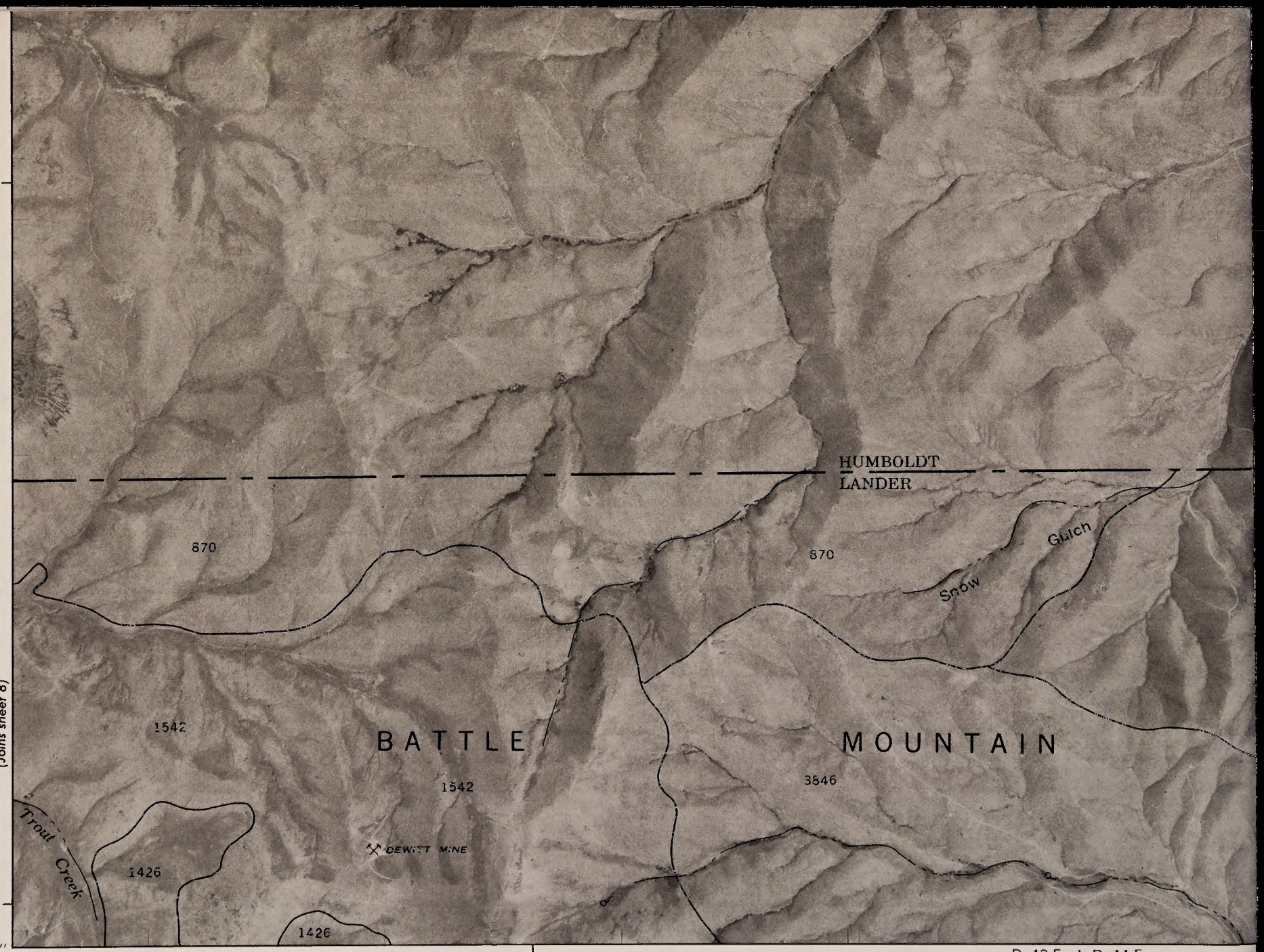

40°37'30"
117°07'30"

R. 43 E. | R. 44 E.

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA.

N

5000 10000 Feet

1 2 3 Kilometers

00

NORTHERN PART NO. 9

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 10
LANDER COUNTY, NEVADA, NORTH PART
(BATTLE MTN NW QUADRANGLE)

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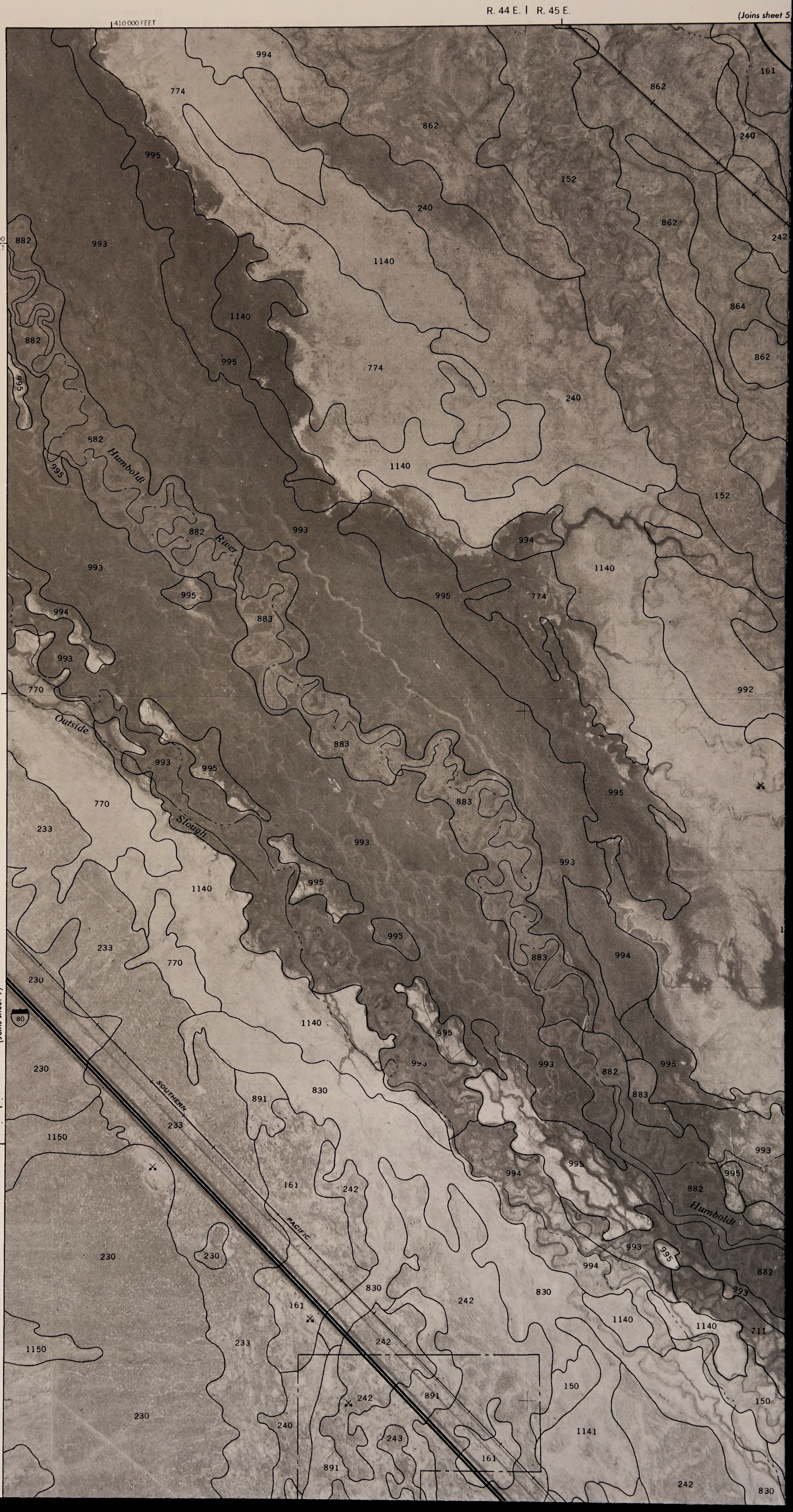
LANDER COUNTY, NEVADA, NORTHERN PART NO. 10

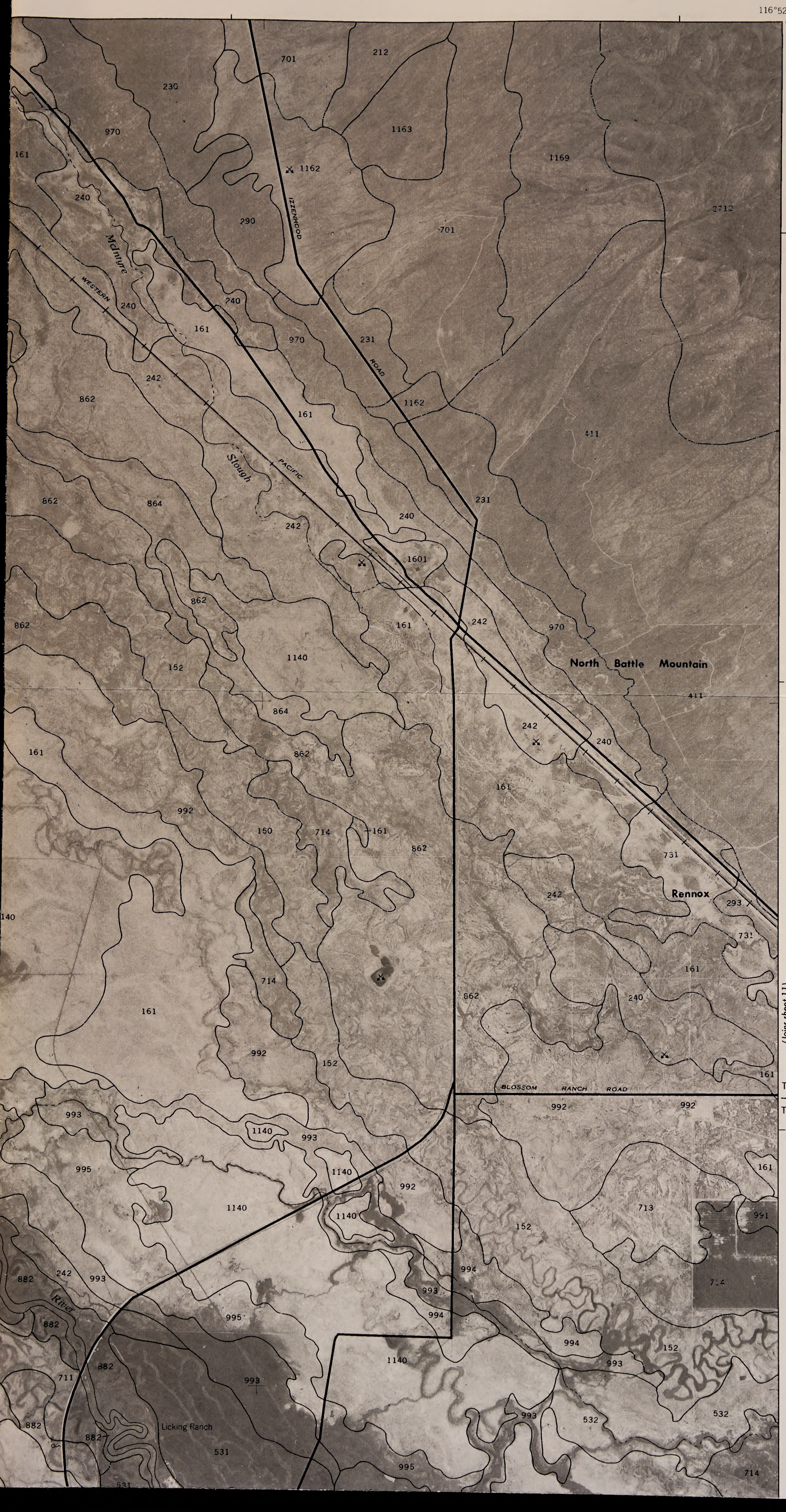
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



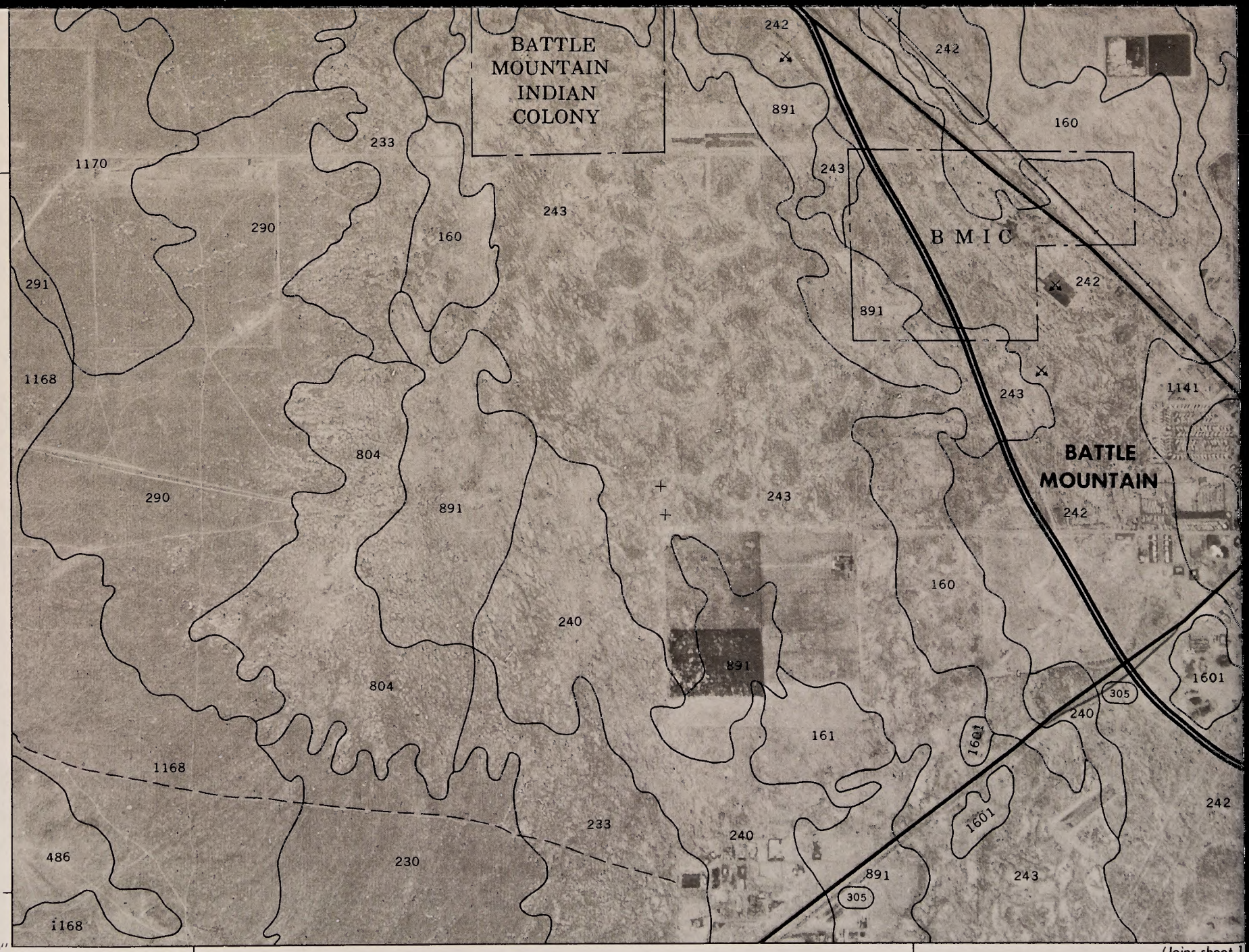
SHEET NUMBER 10

LANDER COUNTY, NEVADA, NORTH PART

(BATTLE MTN NW QUADRANGLE)



(Joins sheet 11)



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Scale - 1:24

LANDER COUNTY, NEVADA

5000 10000 Feet

1 2 3 Kilometers

000

N

, NORTHERN PART NO. 10

SHEET NO. 10 OF 51

#27245151 ID: 88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 11
LANDER COUNTY, NEVADA, NORTH PART
(BATTLE MTN NE QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale · 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 11

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

R. 45 E. | R. 46 E.

(Joins sheet 6)

450 000 FEET

2 180 000 FEET

T. 33 N.

T. 32 N.

(Joins sheet 10)

1423

131

SHEEP

Sheep Creek

CRE

1423

2712

LIMIT

131

SNOWSTORM MINE

411

2712

293

411

SURVEY

293

161

731

WESTERN

731

BLOSSOM RANCH ROAD

163

PACIFIC

1042

Jenkins

SOIL

161

992

991

Blossom Ranch

991

1140

150

150

OF

714

1140

714

713

152

711

150

LIMIT

532

995

994

882

532

995

714

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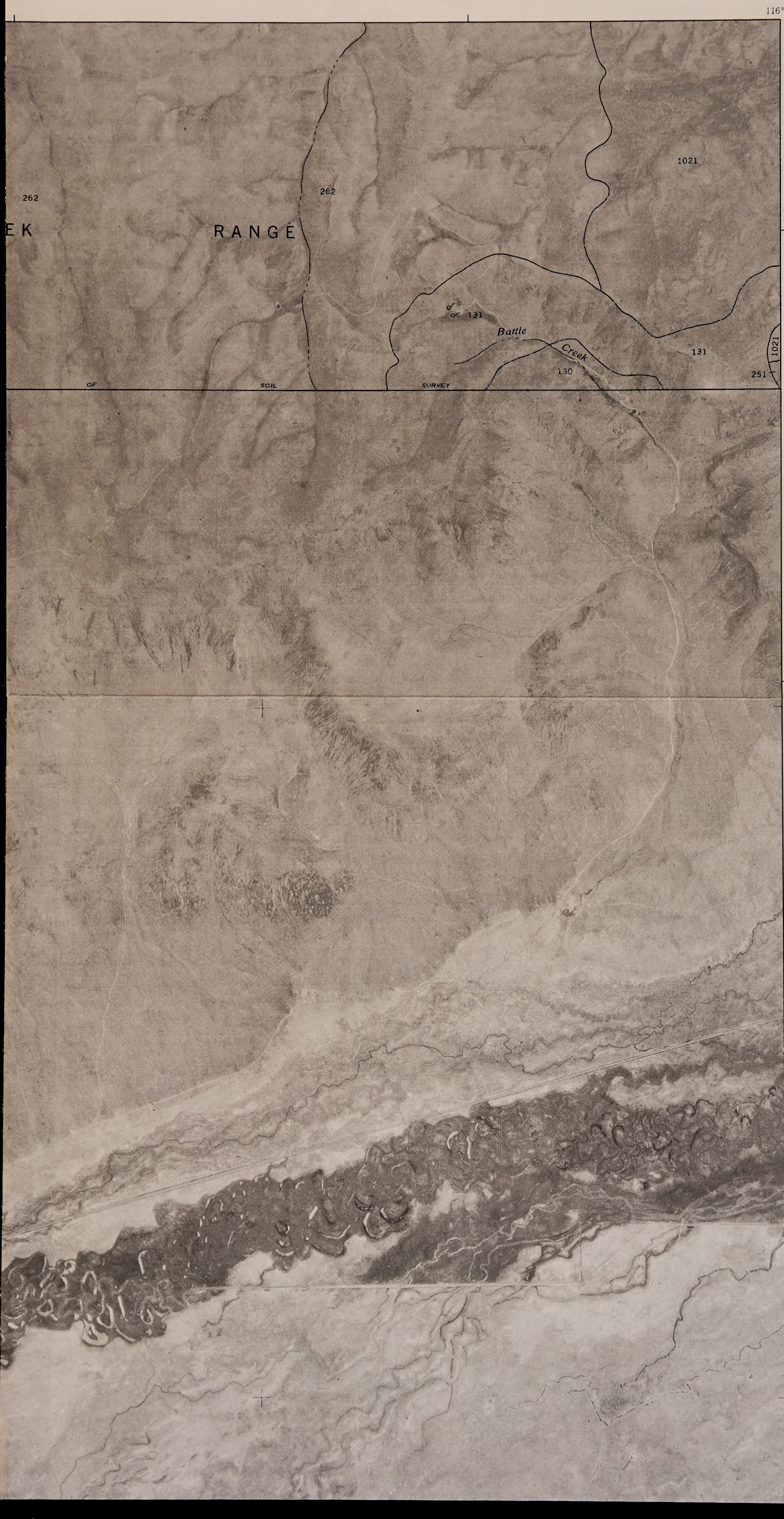
SHEET NUMBER 11

LANDER COUNTY, NEVADA, NORTH PART

(BATTLE MTN NE QUADRANGLE)



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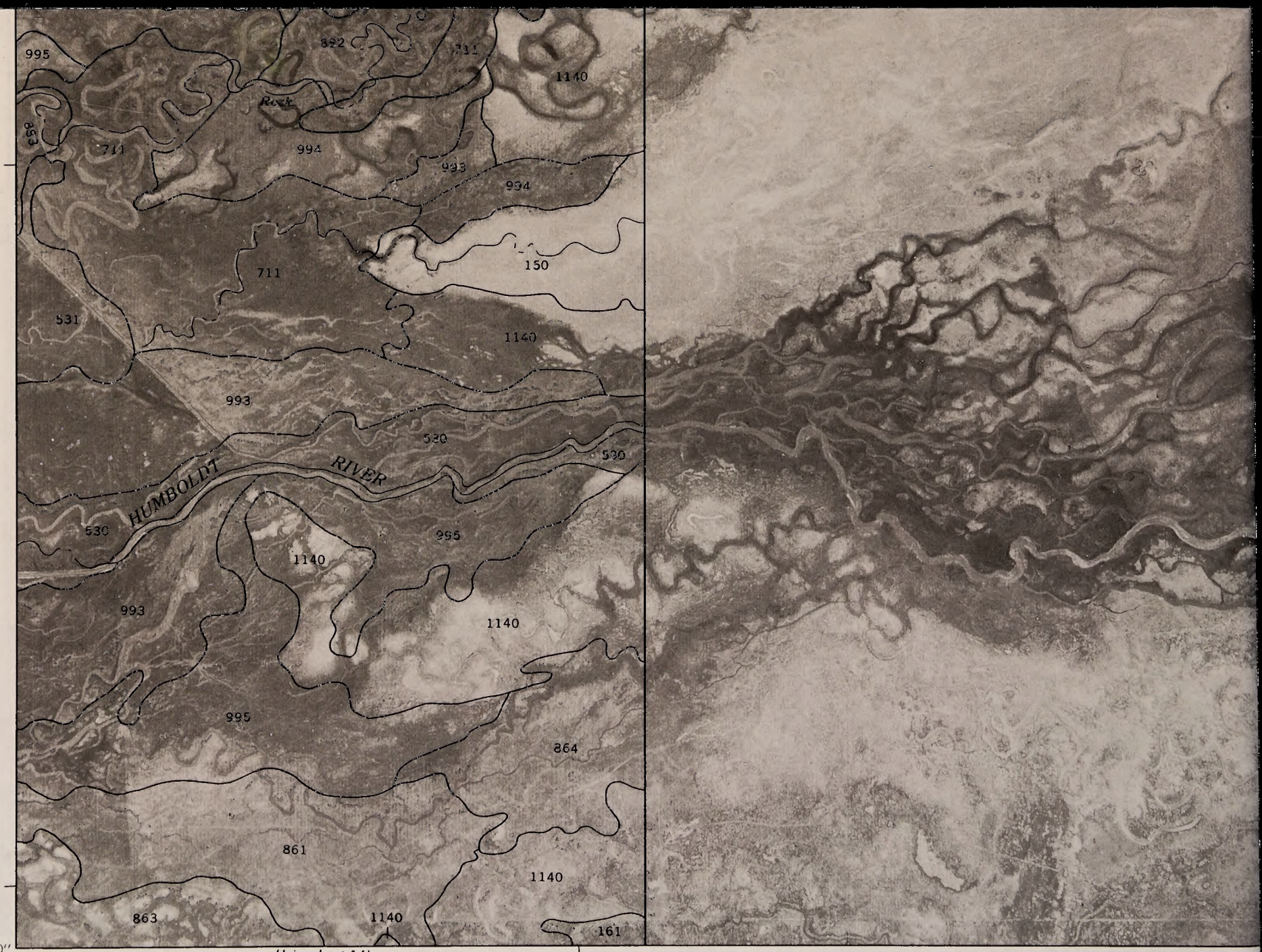

40°37'30"
116°52'30"

(Joins sheet 16)

R. 45 E. | R. 46 E.

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,

2 140 000
FEET

470 000 FEET

5 000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 11

SHEET NO. 11 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 12
LANDER COUNTY, NEVADA, NORTH PART
(CHERRY CREEK SE AND BUFFALO SPRINGS SW QUADRANGLES)

INSET

R. 40 E. | R. 41 E.

R. 41 E. | R. 42 E.

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 12

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

INSET

R. 40 E. | R. 41 E.

310 000 FEET

117°22'30"

40°22'30"

320 000 FEE

2 040 000 FEET

2 130 000 FEET

T. 31 N.

T. 29 N.

T. 28 N.

1140

1143

247

1143

247

2062

2066

2062

1143

2062

701

2794

Squaw Tit

2794

2062

2571

2062

3622

COUNTY

COUNTY

PERSHING

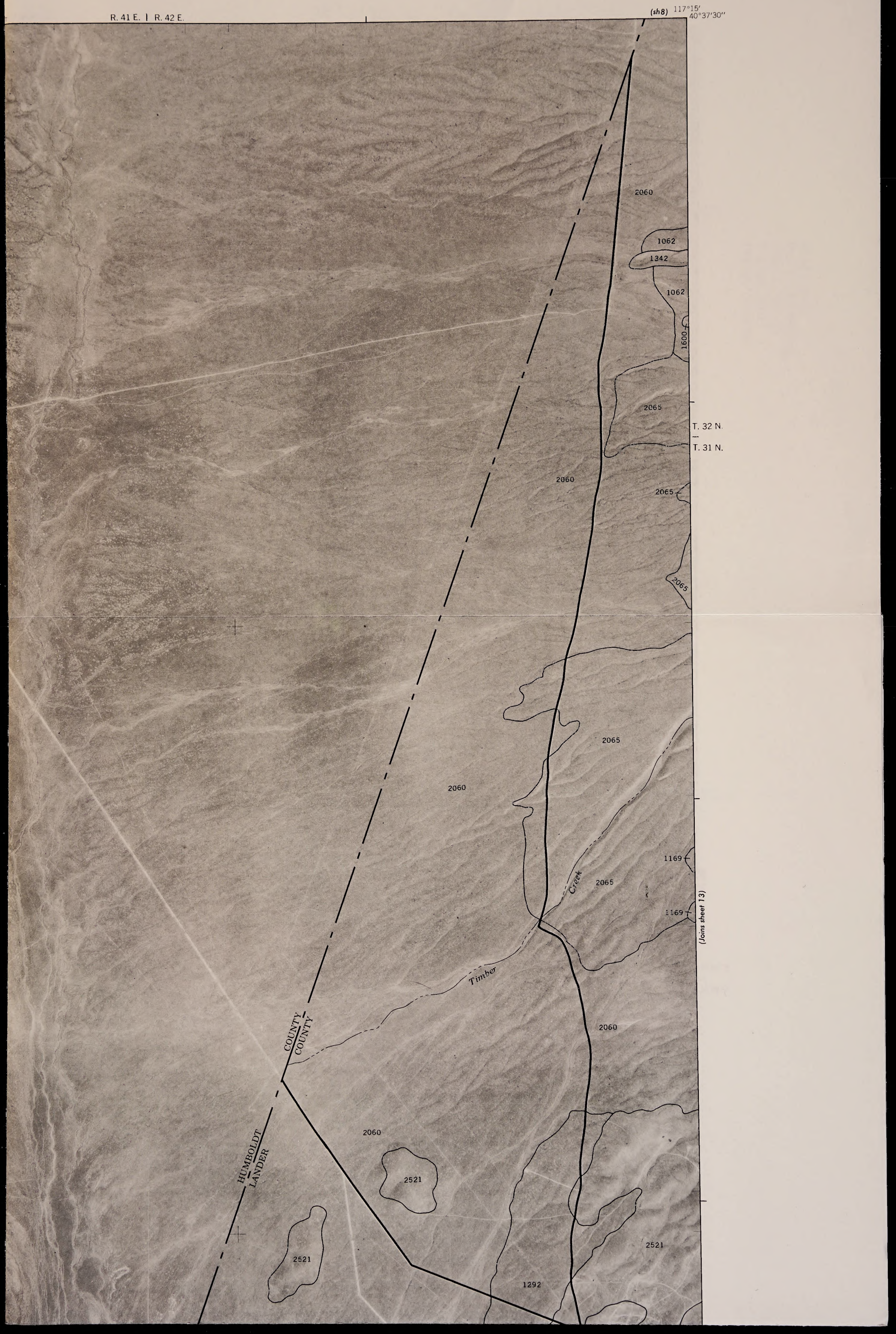
LANDER

(Joins sheet 24)

SHEET NUMBER 12

LANDER COUNTY, NEVADA, NORTH PART

(CHERRY CREEK SE AND BUFFALO SPRINGS SW QUADRANGLES)



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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

2 100 000
FEET

T. 31 N.

T. 30 N.

R. 41 E. | R. 42 E.

(Joins sheet 18)

330 000 FEET

5000 10000 Feet

1 2 3 Kilometers

000

N

. NORTHERN PART NO. 12

SHEET NO. 12 OF 51

#27245151 ID: 99075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 13
LANDER COUNTY, NEVADA, NORTH PART
(ANTLER PEAK SW QUADRANGLE)

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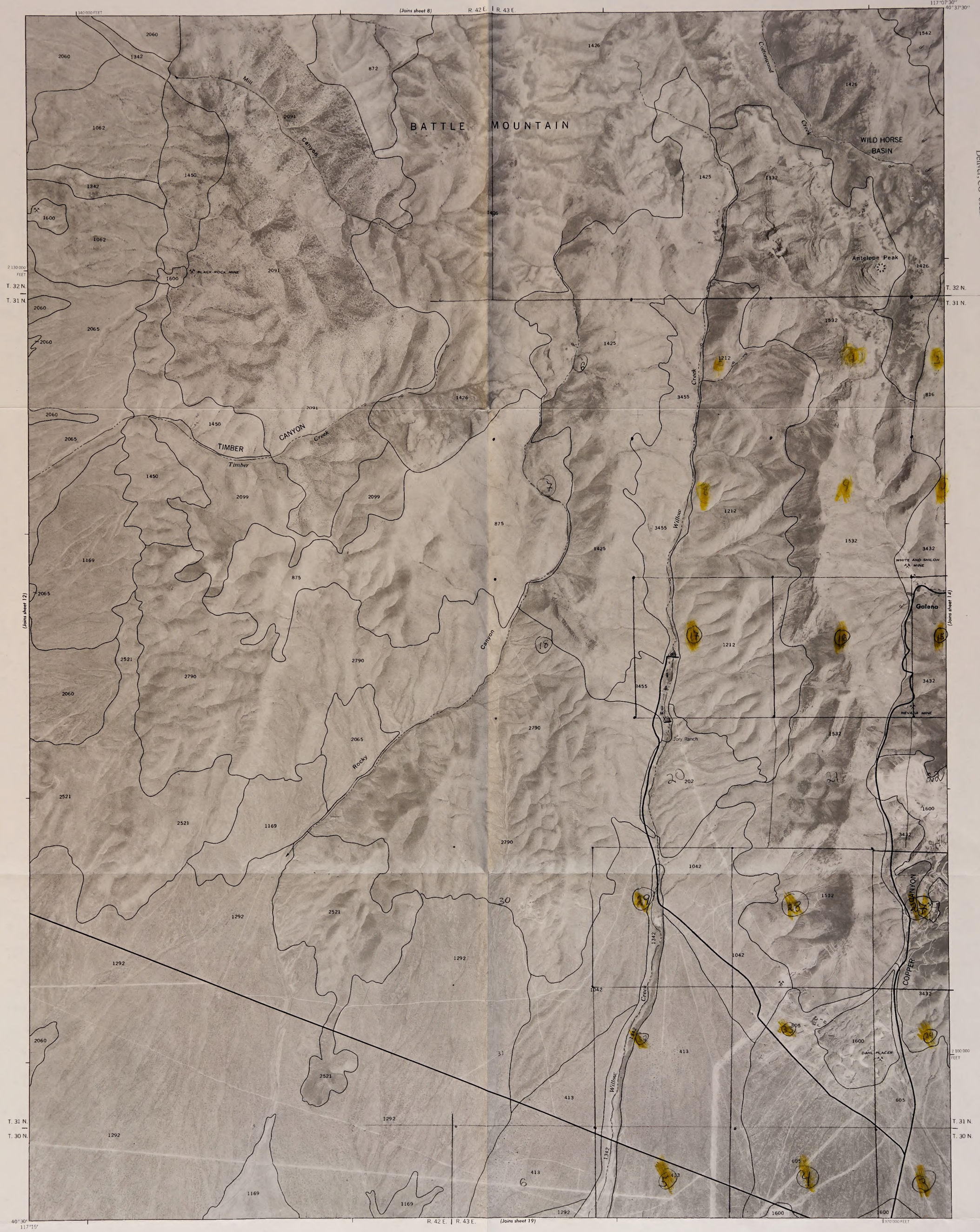

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 13

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

#27245151 ID: 88075605 S599.N3 L36 1992

SHEET NUMBER 13

LANDER COUNTY, NEVADA, NORTH PART

(ANTLER PEAK SW QUADRANGLE)

R. 43 E.

117°07'30"

40°37'30"

MOUNTAIN

Cottonwood Creek

WILD HORSE BASIN

Antelope Peak

Creek

Willow Creek

WHITE AND SHILOH MINE

NEVADA MINE

Galena

Jory Ranch

(Joins sheet 14)

T. 32 N.

T. 31 N.

1426 1542 1425 1532 1212 3455 816 875 2790 3432 1600 1042 202

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA.

(Joins sheet 19)

5000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 13

SHEET NO. 13 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 14
LANDER COUNTY, NEVADA, NORTH PART
(ANTLER PEAK SE QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale · 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 14

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 14

LANDER COUNTY, NEVADA, NORTH PART

(ANTLER PEAK SE QUADRANGLE)

(Joins sheet 9)

117°00'

40°37'30"

1600

Canyon

Vail

VAIL PLACER

1216

COPPER KING MINE

ELEPHANT HEAD

231

1168

1216

2702

CARISSA MINE

TURQUOISE MINE

3846

CANYON

1600

SWEET MARIE MINE

WIDOW MINE

2702

486

MOUNTAIN

COPPER

BASIN

486

1168

T. 32 N.

T. 31 N.

346

2069

1292

205

2064

1294

1294

1294

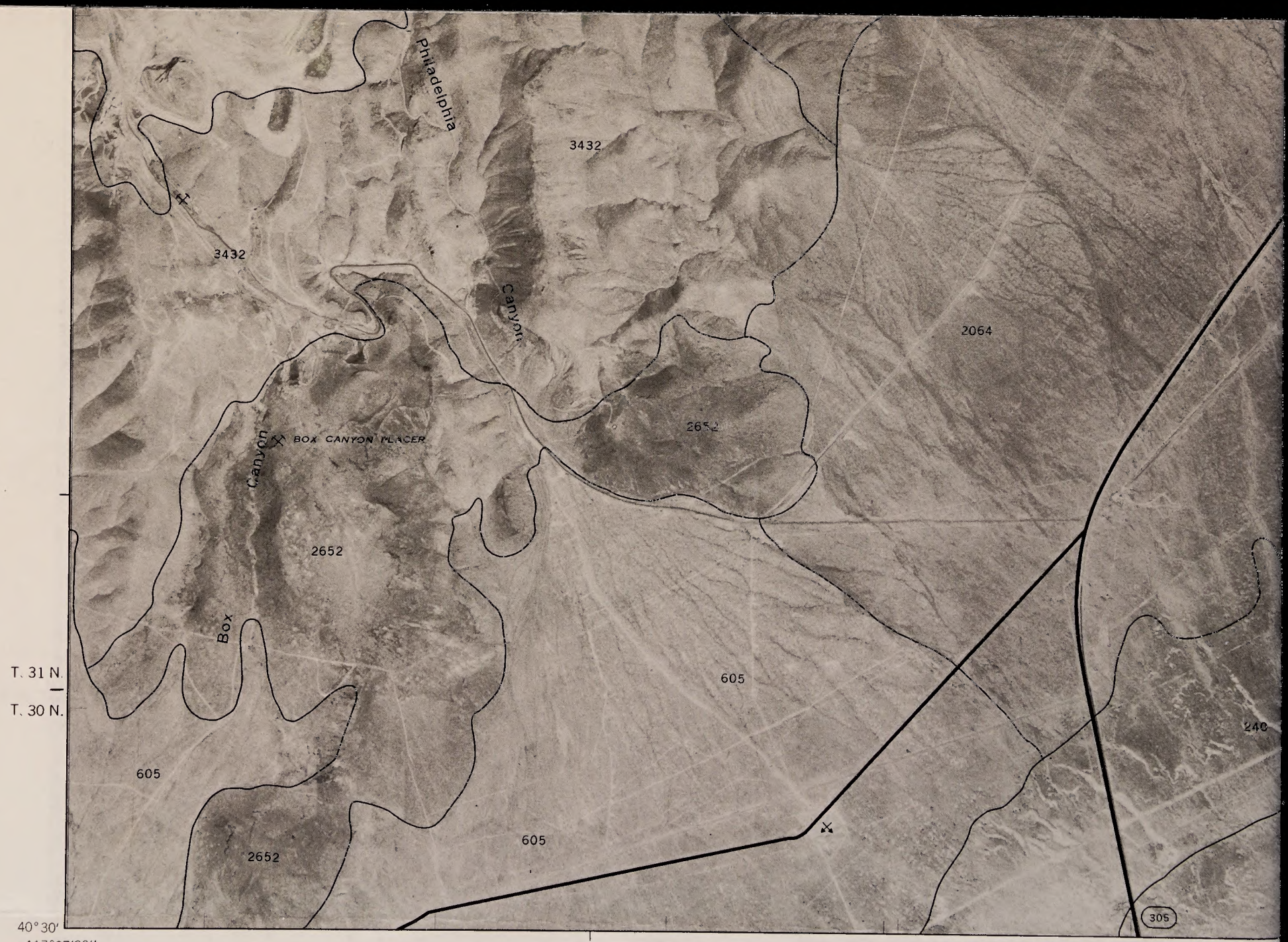
161

1294

2064

161

(Joins sheet 15)



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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

2 100 000
FEET

T. 31 N.

T. 30 N.

400 000 FEET

N

5000 10000 Feet

1 2 3 Kilometers

000

NORTHERN PART NO. 14

SHEET NO. 14 OF 51

#27245151 ID:88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 15
LANDER COUNTY, NEVADA, NORTH PART
BATTLE MTN SW QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 15

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

R. 44 E. | R. 45 E.

(Joins sheet 1(

410 000 FEET

2 130 000 FEET

T. 32 N.

T. 31 N.

(Joins sheet 14)

#27245151 ID: 88075605 S599.N3 L36 1992

SHEET NUMBER 15

LANDER COUNTY, NEVADA, NORTH PART

BATTLE MTN SW QUADRANGLE)

116°52'30"

40°37'30"

SOUTHERN PACIFIC

HILLTOP ROAD

JENKINS ROAD

LANDER COUNTY AIRPORT

Reese River

T. 32 N.

T. 31 N.

(Joins sheet 16)

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

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LANDER COUNTY, NEVADA,

2 100 000
FEET

1032

T. 31 N.

T. 30 N.

440 000 FEET

N

5000 10000 Feet

1 2 3 Kilometers

NORTHERN PART NO. 15

SHEET NO. 15 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 16
LANDER COUNTY, NEVADA, NORTH PART
(BATTLE MTN SE QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale · 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 16

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 16

LANDER COUNTY, NEVADA, NORTH PART

(BATTLE MTN SE QUADRANGLE)

116°45′

40°37′30″

LIMIT OF SOIL SURVEY

80

892 1170 1412

590 170 185 291 1042

170 161 185 290 482

892 230 170 1412

230 290 1281

590 1281 1220

1031 161 800 1412

892 1170

161 731 892 892 1281

1031 1170 1220

731 731 1291

1281

1031

290

1033 1162

290 1291

SHOSHONE RANGE

ROAD

LIGHT

BEACON

BEACON LIGHT ROAD

T. 32 N.

T. 31 N.

(Joins sheet 17)

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5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

290
1031
290
291
1162
1291
171
1163
284
1220
2 100 000
FEET
1162
171
284
Slaven
290
290
1220
Canyon
T. 31 N.
1680
T. 30 N.
3071
482
1680
482
1600
470 000 FEET
N
5000
10000 Feet
1
2
3 Kilometers
NORTHERN PART NO. 16
SHEET NO. 16 OF 51

27245151 ID: 88075605 S 599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 17
LANDER COUNTY, NEVADA, NORTH PART
(DUNPHY SW AND CRESCENT VALLEY NE AND SE QUADRANGLES)

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INSET A

INSET B

R. 46 E. | R. 47 E. | R. 48 E.

480 000 FEET | 515 000 FEET

116°42'45" | 116°35'15" | 116°35'30"

40°37'30" | 40°30' | 40°22'30"

2 130 000 FEET | 2 090 000 FEET | 2 040 000 FEET

2 100 000 FEET | 2 050 000 FEET | 2 010 000 FEET

T. 32 N. — T. 31 N.

T. 31 N. — T. 30 N.

T. 30 N. — T. 29 N.

T. 29 N. — T. 28 N.

SHOSHONE RANGE

LIMIT OF SOIL SURVEY

PREVIOUSLY PUBLISHED EUREKA COUNTY BDY

LANDER COUNTY

EUREKA COUNTY

Fire Creek

BEACON LIGHT ROAD

Slaven Canyon

(Joins sheet 16)

(Joins sheet 23)

(Joins inset B, upper right)

(Joins inset A, lower left)

(Joins sheet 29)

(Joins sheet 37)

1412 1412 482 482 1220 1220 1220 1220 1291 284 1220 1291 284 1220 284 1220 1220 284 1220 3071

251 284 284 251 1041 1041 1085 1041 1165 1085 1165 1041 1165 1041 1165 2069 1165 1041 2069 1601

2069 1601 1041 1041 1165 1165 1041 1041 1165 2060 2060 1165 1165 660 1165 3742 3661 3742 660 161 169 161 169

306

5000 AND 10000 FOOT GRID TICKS

5000 4000 3000 2000 1000 0 5000 10000 Feet

1 .5 0 1 2 3 Kilometers

Scale - 1:24 000

N

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LANDER COUNTY, NEVADA, NORTHERN PART NO. 17

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

INSE

R. 46 E. | R. 47 E. | R. 47 E. |

480 000 FEET

515 000 FEET

116°42'45"

40°37'30"

2 090 000 FEET

2 130 000 FEET

T. 32 N.

T. 31 N.

T. 30 N.

T. 29 N.

SHOSHONE RANGE

1412

1412

482

482

1220

1220

1220

1291

284

284

251

251

284

1041

1085

1085

1165

1165

1041

1041

LIMIT OF

SURVEY

SOIL

OF

Fire

BEACON LIGHT ROAD

(Joins sheet 16)

(Joins sheet 23)

#27245151 ID:88075605 S 599.N3 L36 1992

SHEET NUMBER 17

LANDER COUNTY, NEVADA, NORTH PART

(DUNPHY SW AND CRESCENT VALLEY NE AND SE QUADRANGLES)

T A

R. 48 E.

116°35'15"
40°30'

R. 47 E. | R. 48 E.

INSET B

(Joins inset A, lower left)

515 000 FEET

116°35'30"
40°22'30"

2069

1601

1041

1041

1165

1165

2 040 000 FEET

1041

1041

306

1165

1041

T. 29 N.

T. 28 N.

1041

2060

2060

1165

1165

1165

660

660

3742

3661

IL SURVEY

1041

Creek

EUREKA COUNTY BDY

LANDER COUNTY

EUREKA COUNTY

PREVIOUSLY PUBLISHED EUREKA COUNTY BDY

LANDER COUNTY

EUREKA COUNTY

1041

1165

1165

T. 30 N.

T. 29 N.

(Joins sheet 29)

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5000 AND 10000 FOOT GRID

5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,

1041

1165

1041

2069

1041

2 050 000
FEET

520 000 FEET

E.

TICKS

5000 10000 Feet

1 2 3 Kilometers

00

NORTHERN PART NO. 17

169

161

169

2 010 000
FEET

161

169

306

40°15'
116° 37'30"

(Joins sheet 37)

520 000 FEET

R. 47 E. | R. 48 E.

N

5000 AND 10000 FOOT GRID TICKS

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 18
LANDER COUNTY, NEVADA, NORTH PART
(BUFFALO SPRINGS NE QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale · 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 18

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 18

LANDER COUNTY, NEVADA, NORTH PART

(BUFFALO SPRINGS NE QUADRANGLE)

ns sheet 12)

R. 41 E. | R. 42 E.

117°15'

40°30'

240 240 1292 240 293 293 852 293 240 240 293 1140 852 240 247 240 240 1145 247 247 1140 1140 1140 1145 740 1145 247

LEY

(Joins sheet 19)

T. 30 N.

T. 29 N.

40°22'30"
117°22'30"

(Joins sheet 24)

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5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVAD

R. 41 E. | R. 42 E.

N

5000 10000 Feet

1 2 3 Kilometers

000

A, NORTHERN PART NO. 18

#27245151 ID: 88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 19
LANDER COUNTY, NEVADA, NORTH PART
(McCOY NW QUADRANGLE)

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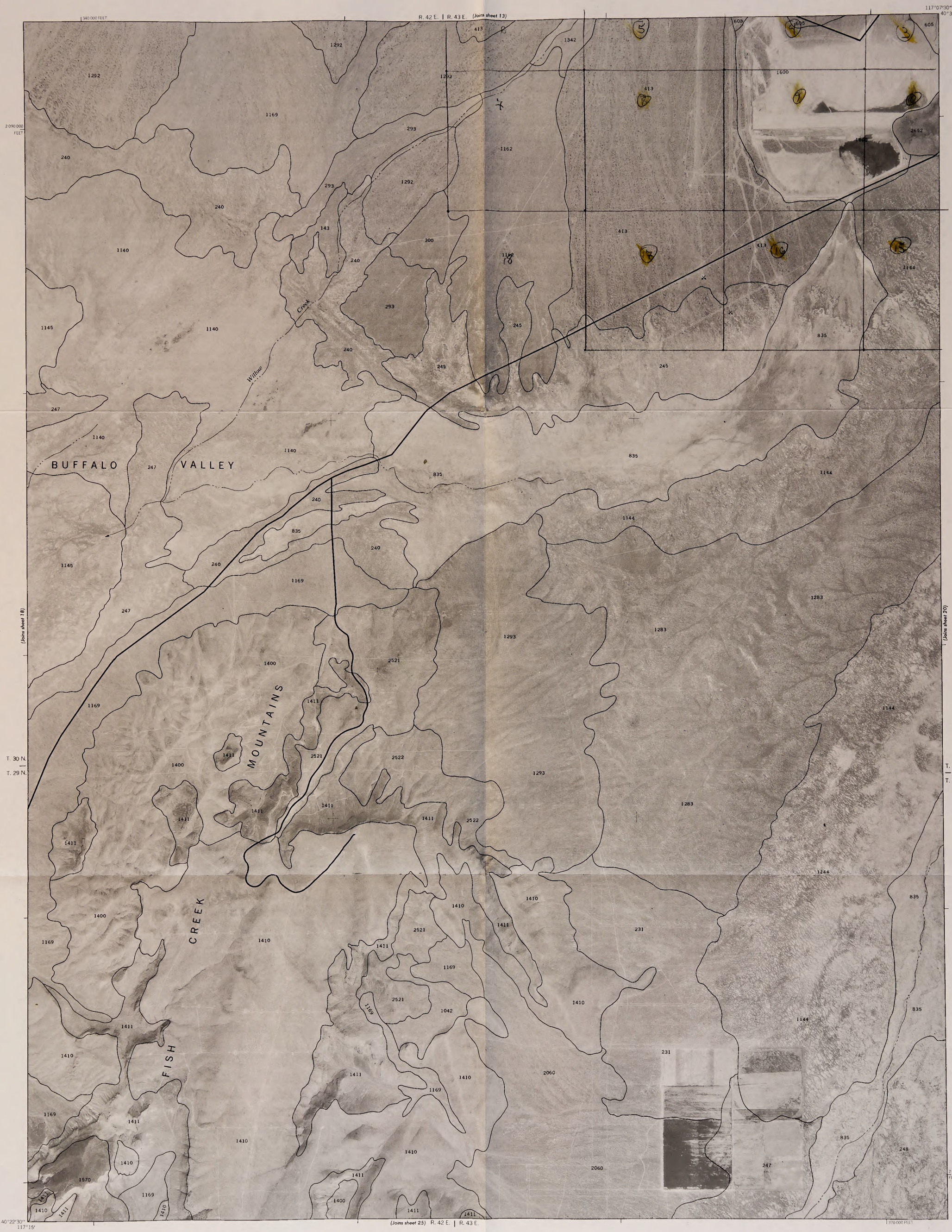

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5 000 4 000 3000 2000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 19

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

27245151 ID: 88075605 S599 .N3 L36 1992

SHEET NUMBER 19

LANDER COUNTY, NEVADA, NORTH PART

(McCOY NW QUADRANGLE)

(sheet 13)

117°07'30"

40°30'

(Joins sheet 20)

T. 30 N.

—

T. 29 N.

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(Joins sheet 25) R. 42 E. | R. 43 E.

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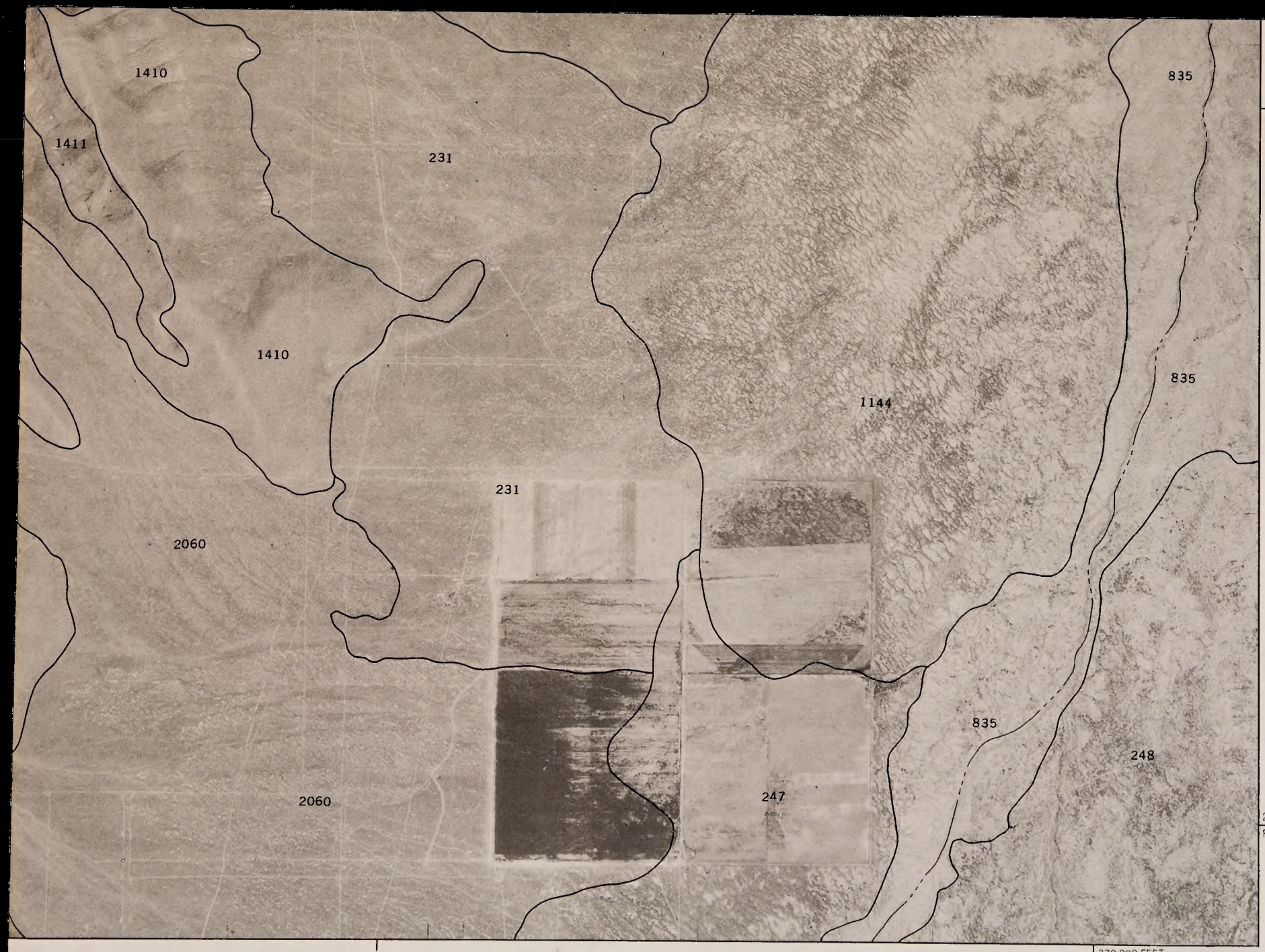
5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,



5000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 19

SHEET NO. 19 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 20
LANDER COUNTY, NEVADA, NORTH PART
(McCOY NE QUADRANGLE)

117°00′
40°30′

380 000 FEET

R. 43 E. | R. 44 E.

(Joins sheet 14)

2 090 000 FEET

(Joins sheet 19)

T. 30 N.
T. 29 N.

(Joins sheet 21)

2 050 000 FEET

400 000 FEET

40°22′30″
117°07′30″

R. 43 E. | R. 44 E.

(Joins sheet 26)

REESE RIVER

Trout Creek

Mill Creek

JENKINS ROAD

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

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LANDER COUNTY, NEVADA, NORTHERN PART NO. 20

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 20

LANDER COUNTY, NEVADA, NORTH PART

(McCOY NE QUADRANGLE)

117°00′

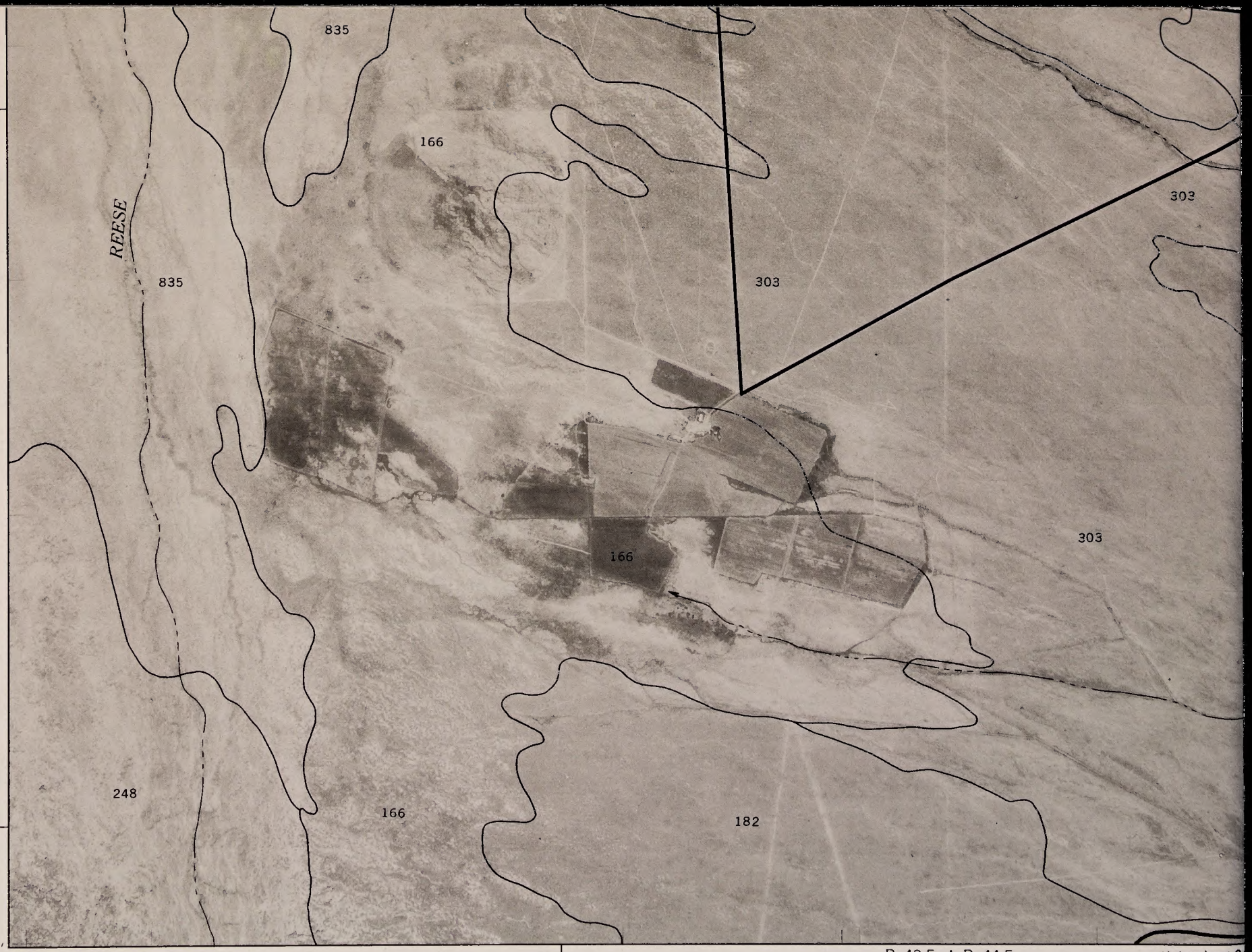
40°30′

(Joins sheet 21)

T. 30 N.

—

T. 29 N.



40°22'30"
117°07'30"

R. 43 E. | R. 44 E.

(Joins sheet 2

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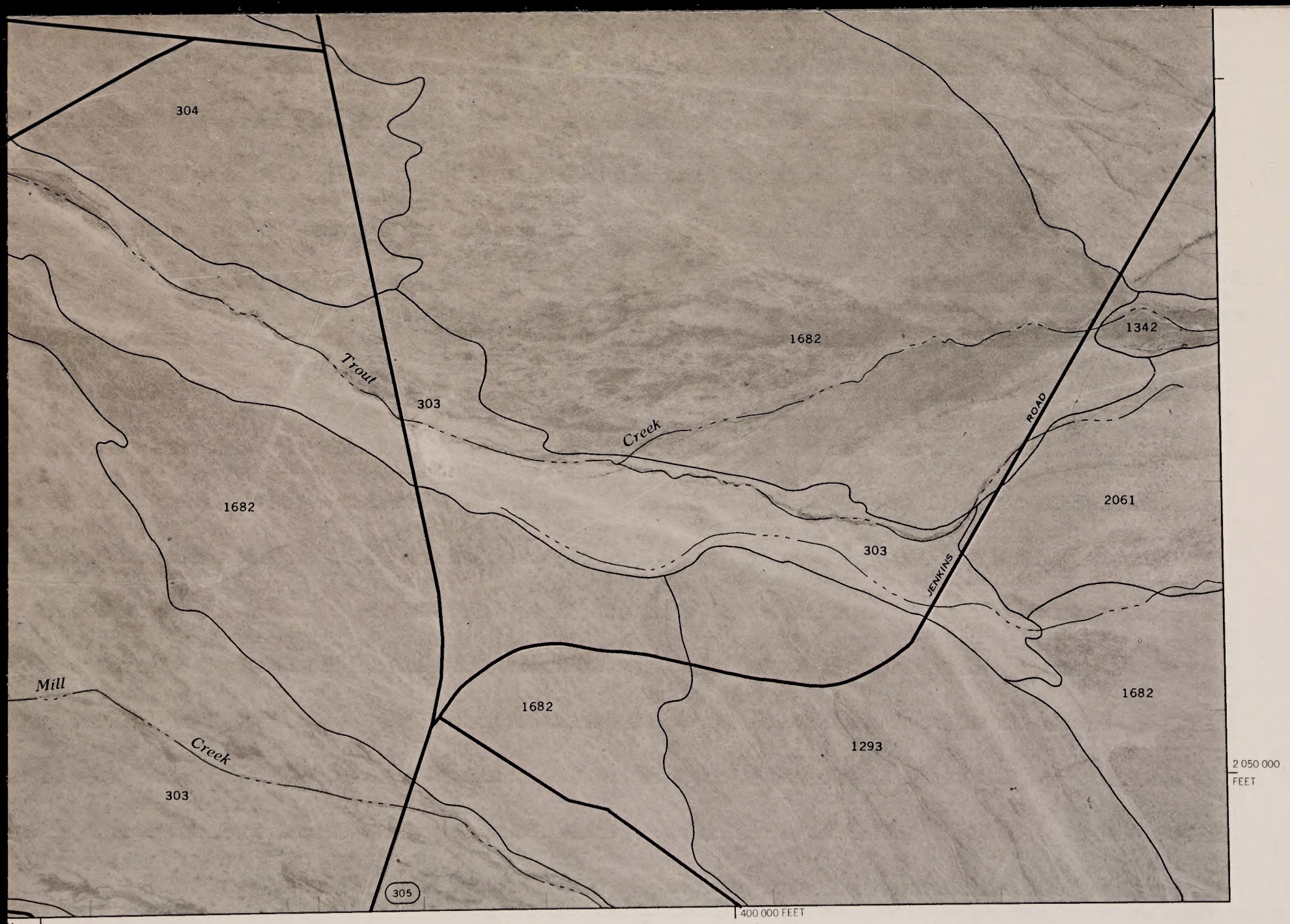
5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA



N

5000 10000 Feet

1 2 3 Kilometers

000

, NORTHERN PART NO. 20

SHEET NO. 20 OF 51

#27245151 ID: 88075605 S599 .N3 L36 1992

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SHEET NUMBER 21
LANDER COUNTY, NEVADA, NORTH PART
(MT. LEWIS NW QUADRANGLE)

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116°52'30"
40°30'

410 000 FEET

R. 44 E. | R. 45 E.

(Joins sheet 15)

2 090 000 FEET

(Joins sheet 20)

(Joins sheet 22)

T. 30 N.
T. 29 N.

2 050 000 FEET

440 000 FEET

40°22'30"
117°00'

(Joins sheet 27)

Home Ranch

JENKINS ROAD

LEWIS CANYON

BETTY O'NEAL MINE

WHISKEY CANYON

Rocky Canyon

Pipe Canyon

LEWIS PEAK

HORSE CANYON

SHOSHONE RANGE

CRIPPEN CANYON

Trout Creek

Hancock Canyon

980 245 340 304 1682 2061 1031 1163 231 230 290 1062 1169 1342 102 482 1263 1203 875 1422 467 1429 466 3561 4051

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 21

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

410 000 FEET

R. 44 E. | R. 45 E.

(Joins she

2 090 000 FEET

T. 30 N.

T. 29 N.

(Joins sheet 20)

980
245
340
340
245
340
1031
245
Home Ranch
304
304
1169
1169
1169
ROAD
JENKINS
1342
1342
102
102
2061
2061
2061
102
1342

#27245151 ID: 88075605 S 599 .N3 L36 1992

SHEET NUMBER 21

LANDER COUNTY, NEVADA, NORTH PART

(MT. LEWIS NW QUADRANGLE)

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40°22'30"
117°00'

R. 44 E. | R. 45 E.

(Joins sheet 27

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5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA.

875

1422

SHOSHONE

467

CRIPPEN

1429

CANYON

466

1429

466

3561

1429

466

2 050 000
FEET

440 000 FEET

N

5000 10000 Feet

1 2 3 Kilometers

00

NORTHERN PART NO. 21

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 22
LANDER COUNTY, NEVADA, NORTH PART
(MT. LEWIS NE QUADRANGLE)

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5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 22

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

R. 45 E. | R. 46 E.

450 000 FEET

(Joins sheet

2 090 000 FEET

T. 30 N.

T. 29 N.

(Joins sheet 21)

230
290
1163
1062
173
1163
173
482
1062
1062
482
1203
482
1203
482
1662
1203
1263
LEWIS CANYON
BENS PEAK
1263
1263
1203
1662
1263
Dean Canyon
1600
DEAN MINE
PITTSBURG MINE
KATTENHORN MINE
RED TOP MINE
CANYON
Fork
467
112
BLUE DICK MINE
West
RA
VILLE
467

SHEET NUMBER 22

LANDER COUNTY, NEVADA, NORTH PART

(MT. LEWIS NE QUADRANGLE)

116°45′

40°30′

(16)

1680

482

1600

3071

1263

3560

872

1203

1662

CRUM

CANYON

Creek

BATEMAN

CANYON

Canyon

Slaven

NELSON MINE

HILLTOP

East

Fork

Hilltop

CANYON

Canyon

NGE

3417

112

(Joins sheet 23)

T. 30 N.

T. 29 N.

40°22'30"
116°52'30"

R. 45 E. | R. 46 E.

(Joins

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5000 4000 3000 2000 1000 0
1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

sheet 28)

N

5000 10000 Feet

1 2 3 Kilometers

000

A, NORTHERN PART NO. 22

SHEET NO. 22 OF 51

#27245151 ID: 88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 23
LANDER COUNTY, NEVADA NORTH PART
(CRESCENT VALLEY NW QUADRANGLE)

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5 000 4 000 3 000 2 000 1 000 0 5 000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 23

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

R. 46 E. | R. 47 E.

(Joins sheet 17)

480 000 FEET

2 090 000 FEET

T. 30 N.

T. 29 N.

(Joins sheet 22)

284
482
1220
3071
482
Canyon
Slaven
1220
3071
400
1201
400
LIMIT OF
1220
3071
3071
MALPAIS
872
3071
872
RANGE
1202
1703
872
3560
SHOSHONE
1202
Cany
3417
Corral
3417
814
BALD MOUNTAIN
814

#27245151 ID: 88075605 S599.N3 L36 1992

SHEET NUMBER 23

LANDER COUNTY, NEVADA NORTH PART

(CRESCENT VALLEY NW QUADRANGLE)

116°37'30"

40°30'

SOIL SURVEY

284

284

251

3127

284

1201

251

Fire

3127

1041

Creek

1085

1201

1041

1165

1041

1085

1201

1041

2069

1165

1041

1085

(Joins inset A, sheet 17)

T. 30 N.

T. 29 N.

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40°22'30"
116°45'

R. 46 E. | R. 47 E.

(Joins sheet 2

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5000 4000 3000 2000 1000 0

1 .5 0

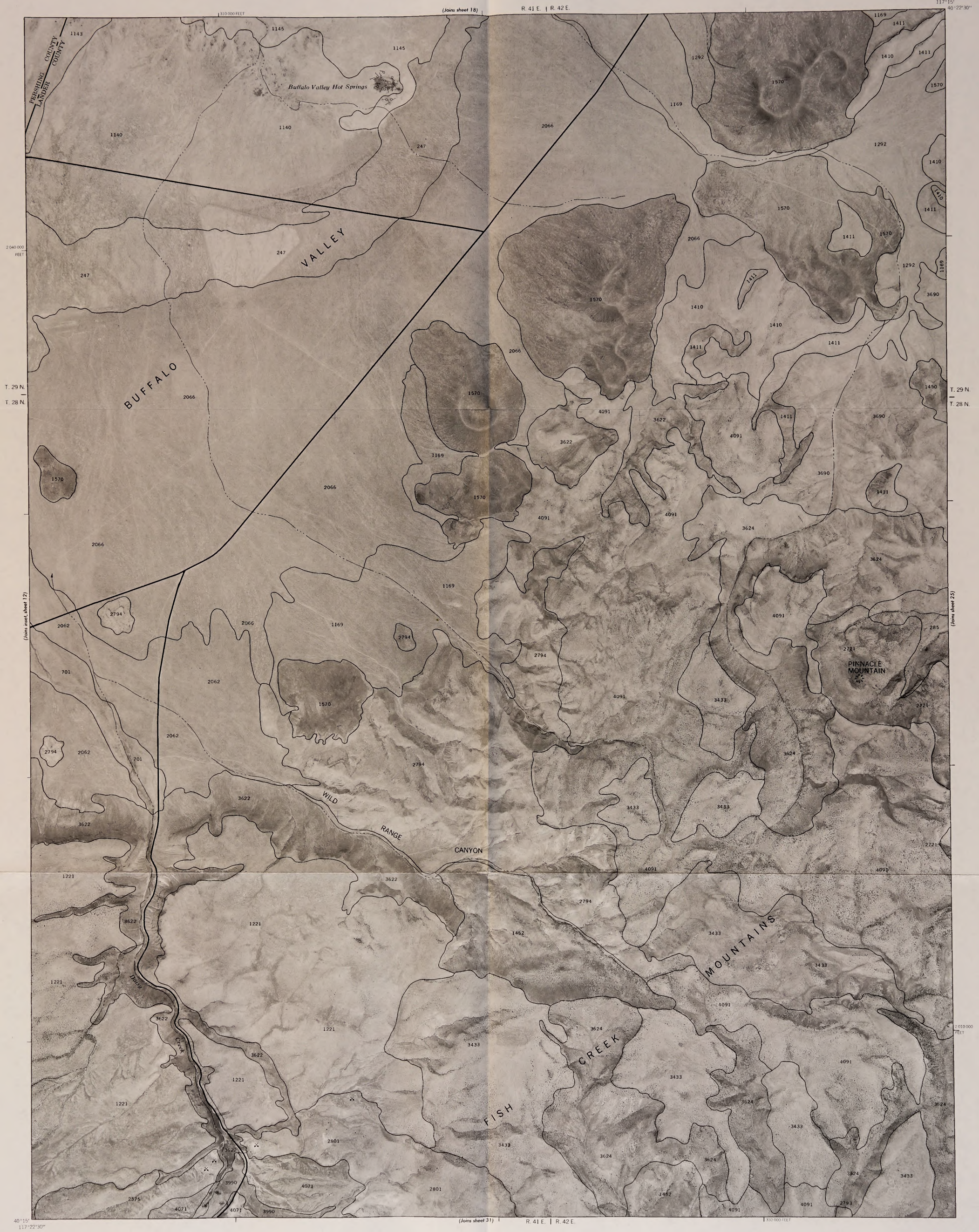
Scale - 1:240

LANDER COUNTY, NEVADA.

NORTHERN PART NO. 23

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 24
LANDER COUNTY, NEVADA, NORTH PART
(BUFFALO SPRING SE QUADRANGLE)



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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 24

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

(Joins sheet 18)

310 000 FEET

2 040 000 FEET

T. 29 N.

T. 28 N.

(Joins inset, sheet 12)

PERSHING COUNTY
LANDER COUNTY

Buffalo Valley Hot Springs

BUFFALO VALLEY

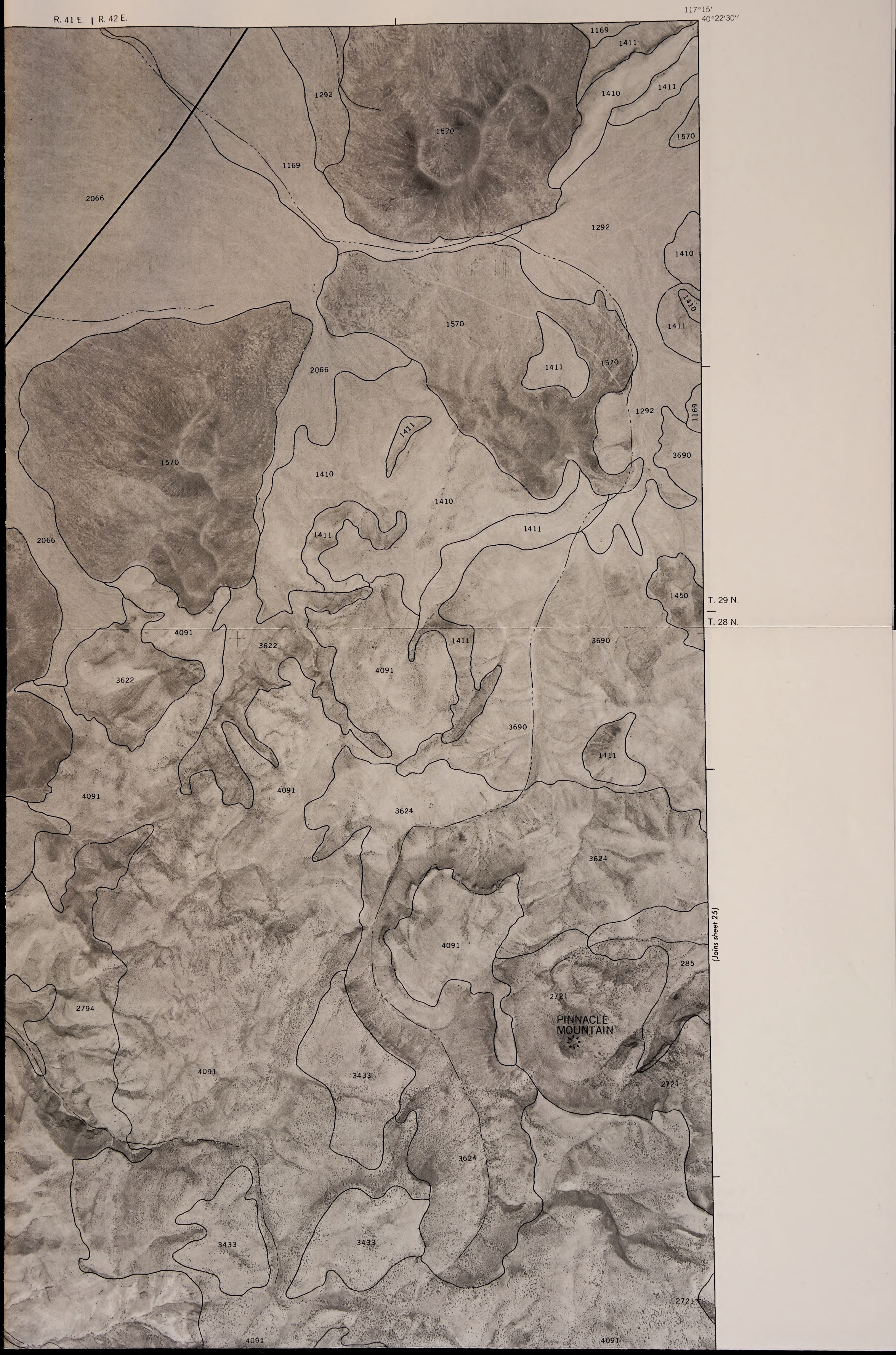
WILD RANGE CANYON

1143
1145
1145
1140
1140
247
247
247
2066
2066
2066
1570
1570
1169
1570
1169
2794
2062
2066
1169
2794
701
2062
2794
2062
701
2062
3622
3622

SHEET NUMBER 24

LANDER COUNTY, NEVADA, NORTH PART

(BUFFALO SPRING SE QUADRANGLE)



40°15'
117°22'30"

(Joins sheet

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

R. 41 E. | R. 42 E.

N

5000 10000 Feet

1 2 3 Kilometers

000

, NORTHERN PART NO. 24

SHEET NO. 24 OF 51

#27245151 ID:88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 25
LANDER COUNTY, NEVADA, NORTH PART
(McCOY SW QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 25

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

340 000 FEET

(Joins sheet 19)

R. 42 E. | R. 43 E.

2 040 000 FEET

T. 29 N.

T. 28 N.

(Joins sheet 24)

MOUNTAIN

CREEK

FISH

McCoy

MCCOY MINE

1410 1411 1169 1411 1410 1411 1410 1292 1570 1411 1400 1292 1410 1411 1292 1410 1411 1400 1411 1292 1169 1411 1410 1411 1169 3690 1411 1292 1169 1411 1410 1411 1292 3690 1450 3690 1400 1400 3690 1411 3690 3624 2065 1293 1400 3652 3690 1400 2521 285 1293 2521 285 3652 4091 2067 2721

#27245151 ID:88075605 S599.N3 L36 1992

SHEET NUMBER 25

LANDER COUNTY, NEVADA, NORTH PART

(McCOY SW QUADRANGLE)

117°07'30"

40°22'30"

2060 247 233 2060 835 248 240 230 230 300 240 233 230 248 230 233 93 230 1293 248 1169 1293 1169 290 161 1293 1169 2062 1293 3652 1293 3652 230 3652

T. 29 N.

T. 28 N.

(Joins sheet 26)

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40°15′
117°15′

(Joins sheet 32)

R. 42 E. | R. 43 E.

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,

5 000 10 000 Feet

1 2 3 Kilometers

N

NORTHERN PART NO. 25

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 26
LANDER COUNTY, NEVADA, NORTH PART
(McCOY SE QUADRANGLE)

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5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

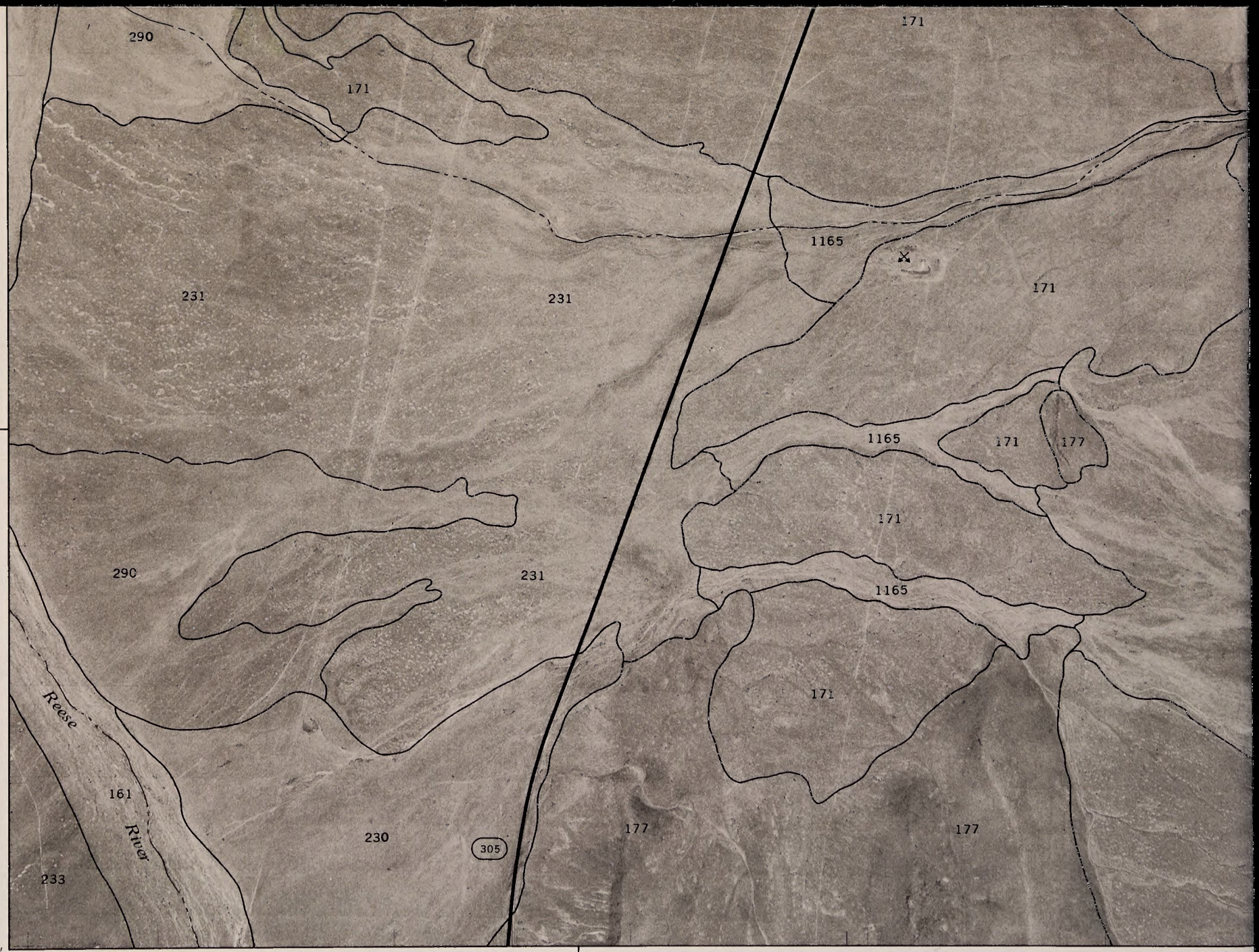
LANDER COUNTY, NEVADA, NORTHERN PART NO. 26

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 26

LANDER COUNTY, NEVADA, NORTH PART

(McCOY SE QUADRANGLE)



40°15′
117°07′30″

R. 43 E. | R. 44 E.

(Joins sheet

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5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

33)

000

, NORTHERN PART NO. 26

#27245151 ID; 88075605 S 599 .N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 27
LANDER COUNTY, NEVADA, NORTH PART
(MT. LEWIS SW QUADRANGLE)

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410 000 FEET
R. 44 E. | R. 45 E.
(Joins sheet 21)
116° 52'30"
40° 22'30"
2 040 000 FEET
T. 29 N.
T. 28 N.
(Joins sheet 26)
(Joins sheet 28)
2 010 000 FEET
40° 15'
117° 00'
440 000 FEET
(Joins sheet 34)

Hancock Canyon
Trout Creek
Goat Peak
Schwin Ranch
GOAT CANYON
Mill Creek
Jacks Canyon
Harry Canyon
North Fork
Middle Fork
South Fork
RANGE
SHOSHONE
Mill Creek Summit
Cooks Creek
Horse Mtn
Wilson Pass
Wilson Canyon

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 27

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

#27245151 ID; 88075605 S 599 .N3 L36 1992

SHEET NUMBER 27

LANDER COUNTY, NEVADA, NORTH PART

(MT. LEWIS SW QUADRANGLE)

116° 52′30″

40° 22′30″

T. 29 N.

T. 28 N.

(Joins sheet 28)

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40°15′
117°00′

R. 44 E. | R. 45 E.

(Joins sheet 3

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5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA.

5000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 27

SHEET NO. 27 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 28
LANDER COUNTY, NEVADA, NORTH PART
(MT. LEWIS SE QUADRANGLE)

This map was compiled by U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies on 1975 orthophotography obtained from U.S. Department of the interior, Geological Survey.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 28

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

R. 45 E. | R. 46 E.

(Joins sheet 2

450 000 FEET

2 040 000 FEET

T. 29 N.

T. 28 N.

(Joins sheet 27)

SHEET NUMBER 28

LANDER COUNTY, NEVADA, NORTH PART

(MT. LEWIS SE QUADRANGLE)

116°45′

40°22′30″

4140 1215 4140 1392 0 1215 4140 Indian 1671

Creek 4140 1202 1215

T. 29 N.

T. 28 N.

3150 4140 3992 4140 3150

4140 Feris Creek 4140 3840

1670 3843 706 3843

(Joins sheet 29)

UTAH MINE CAMP

UTAH MINE 3843 3840

40°15′
116°52′30″

R. 45 E. | R. 46 E.

(Joins sheet 3

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

2 010 000
FEET

470 000 FEET

5)

5 000 10 000 Feet

1 2 3 Kilometers

000

N

, NORTHERN PART NO. 28

SHEET NO. 28 OF 51

#27245151 ID:88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 29
LANDER COUNTY, NEVADA, NORTH PART
(CRESCENT VALLEY SW QUADRANGLE)

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R. 46 E. | R. 47 E.
180 000 FEET
116°37'30"
40°22'30"
(Joins sheet 23)
2 040 000 FEET
T. 29 N.
T. 28 N.
(Joins sheet 28)
(Joins inset, sheet 17)
2 010 000 FEET
40°15'
116°45'
R. 46 E. | R. 47 E.
(Joins sheet 36)
510 000 FEET

BULLION MOUNTAIN
Rock Spring
Tub Spring Gulch
LOVIE MINE
TOMCAT MINE
Lander
Indian Creek
Tenabo
Mill Gulch
GOLDQUARTZ MINE
Goldquartz
ALTENBURG HILL
Triplet Gulch
Gold Acres
GOLD ACRES MINE

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5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 29

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

R. 46 E. | R. 47 E.

(Joins sheet 2

480 000 FEET

2 040 000 FEET

T. 29 N.

T. 28 N.

(Joins sheet 28)

1220

Rock Spring

Tub Spring Gulch

1392

BULLION MOUNTAIN

1202

482

1392

LOVIE MINE

1671

1202

482

1671

3840

Creek

3992

Indian

Lander

1215

706

3992

3992

4140

3840

TOMCAT MINE

2796

Mill Gulch

1240

GOLDQUARTZ MINE

Goldquartz

3843

3840

Triplet

1600

Gulch

3843

1240

2555

#27245151 ID:88075605 S599.N3 L36 1992

SHEET NUMBER 29

LANDER COUNTY, NEVADA, NORTH PART

(CRESCENT VALLEY SW QUADRANGLE)

116°37'30"

40°22'30"

T. 29 N.

T. 28 N.

(Joins inset, sheet 17)

Tenabo

IBURG HILL

Indian Creek

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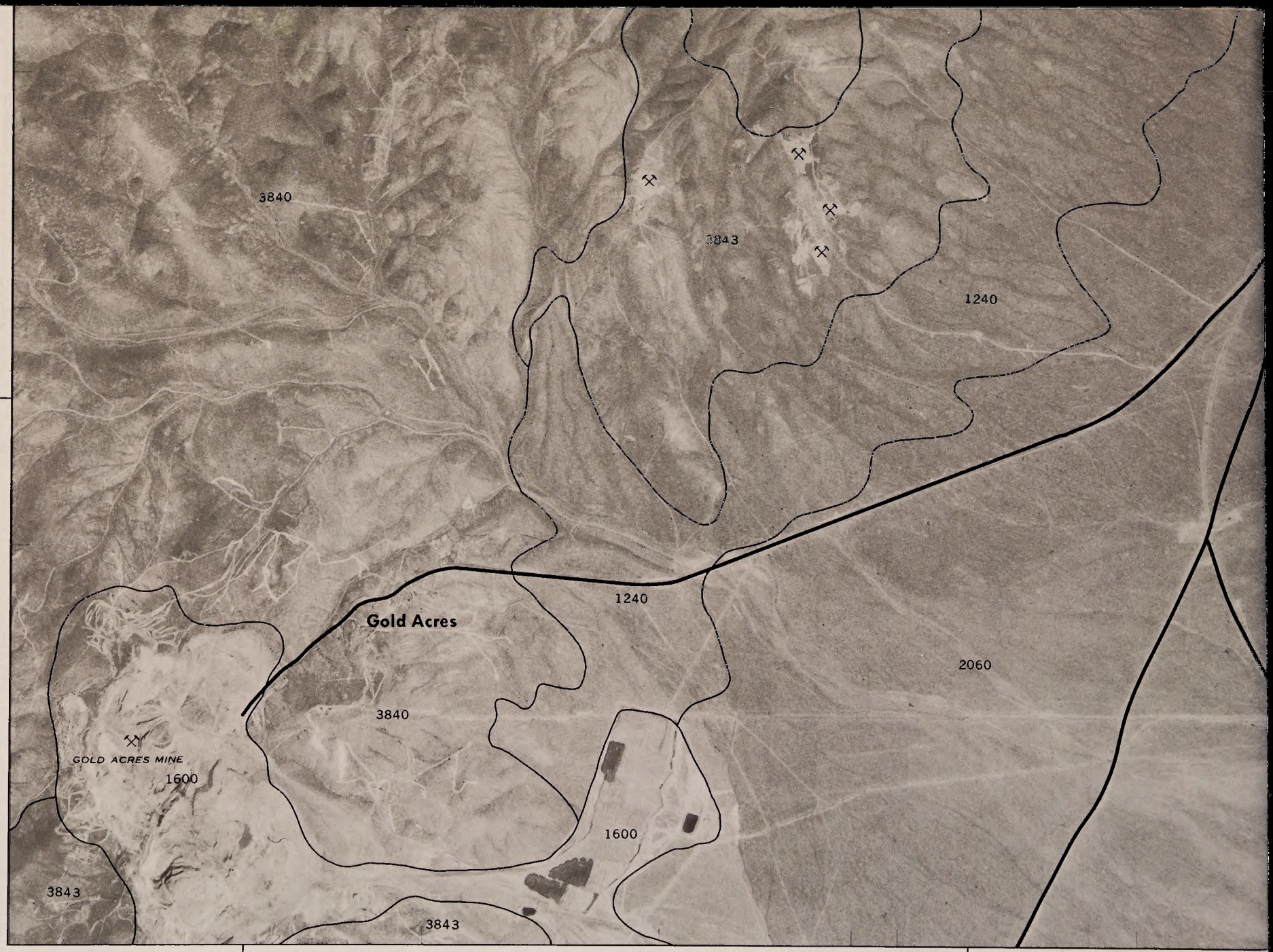

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,

N

5 000 10000 Feet

1 2 3 Kilometers

00

NORTHERN PART NO. 29

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 30
LANDER COUNTY, NEVADA, NORTH PART
(MT. MOSES NW QUADRANGLE)

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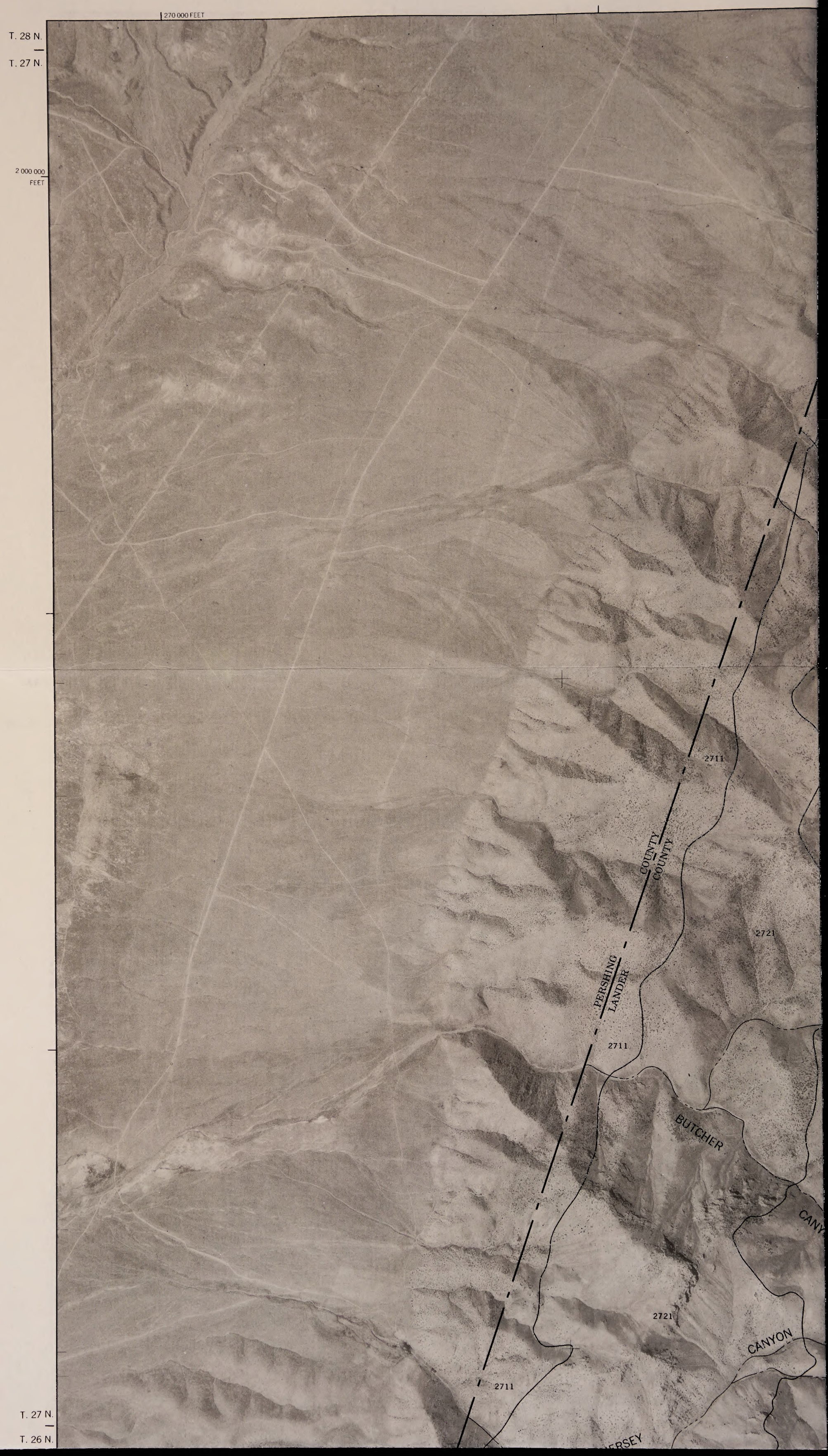
5 000 4 000 3 000 2 000 1 000 0 5 000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 30

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



SHEET NUMBER 30

LANDER COUNTY, NEVADA, NORTH PART

(MT. MOSES NW QUADRANGLE)

R. 40 E. | R. 41 E.

117°22'30"

40°15'

T. 27 N.

(Joins inset, sheet 12)

(Joins sheet 31)

T. 27 N.

T. 26 N.

40°07'30"
117°30'

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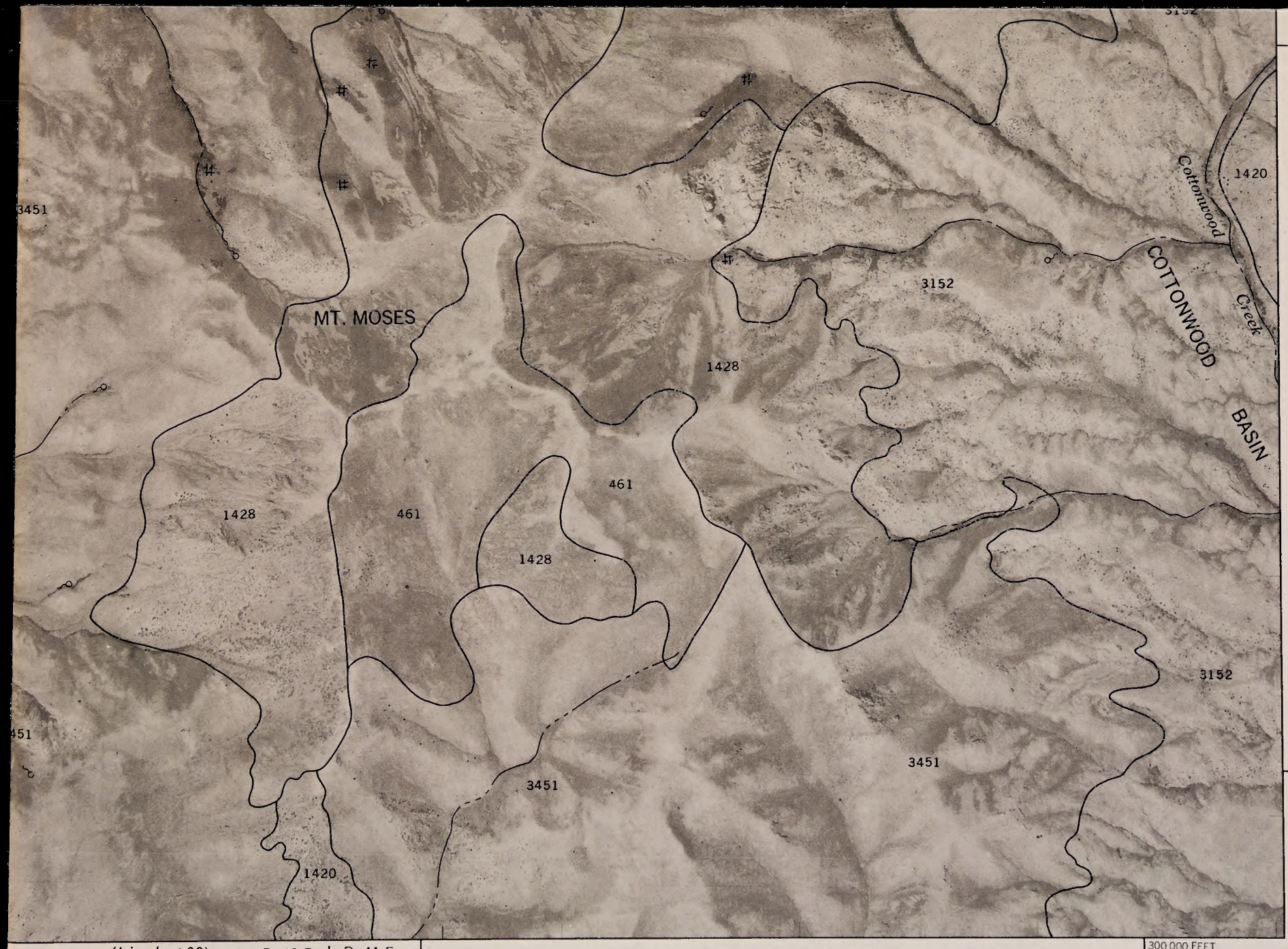
5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA



5000 10000 Feet

1 2 3 Kilometers

000

N

, NORTHERN PART NO. 30

SHEET NO. 30 OF 51

#27245151 ID:88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 31
LANDER COUNTY, NEVADA, NORTH PART
(MT. MOSES NE QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 31

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

(Joins sheet 24)

T. 28 N.
T. 27 N.
2 000 000 FEET
310 000 FEET

1221
2575
4071
3990
2575
4071
3990
2801
4071
2575
Daisy Creek
2575
4091
4071
3990
Daisy Pass
3451
4091
3203
Fish Creek
3203
1420
3152
3451
1420
461
3152
1420
3451
FISH
CREEK
MOUNTAINS
3152
3152

(Joins sheet 30)

Cottonwood Pass

T. 27 N.
T. 26 N.

#27245151 ID:89075605 S599.N3 L36 1992

SHEET NUMBER 31

LANDER COUNTY, NEVADA, NORTH PART

(MT. MOSES NE QUADRANGLE)

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40°07'30"
117°22'30"

(Joins sheet 39

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5000 4000 3000 2000 1000 0
1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,

5000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 31

SHEET NO. 31 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 32
LANDER COUNTY, NEVADA, NORTH PART
(THE CEDARS NW QUADRANGLE)

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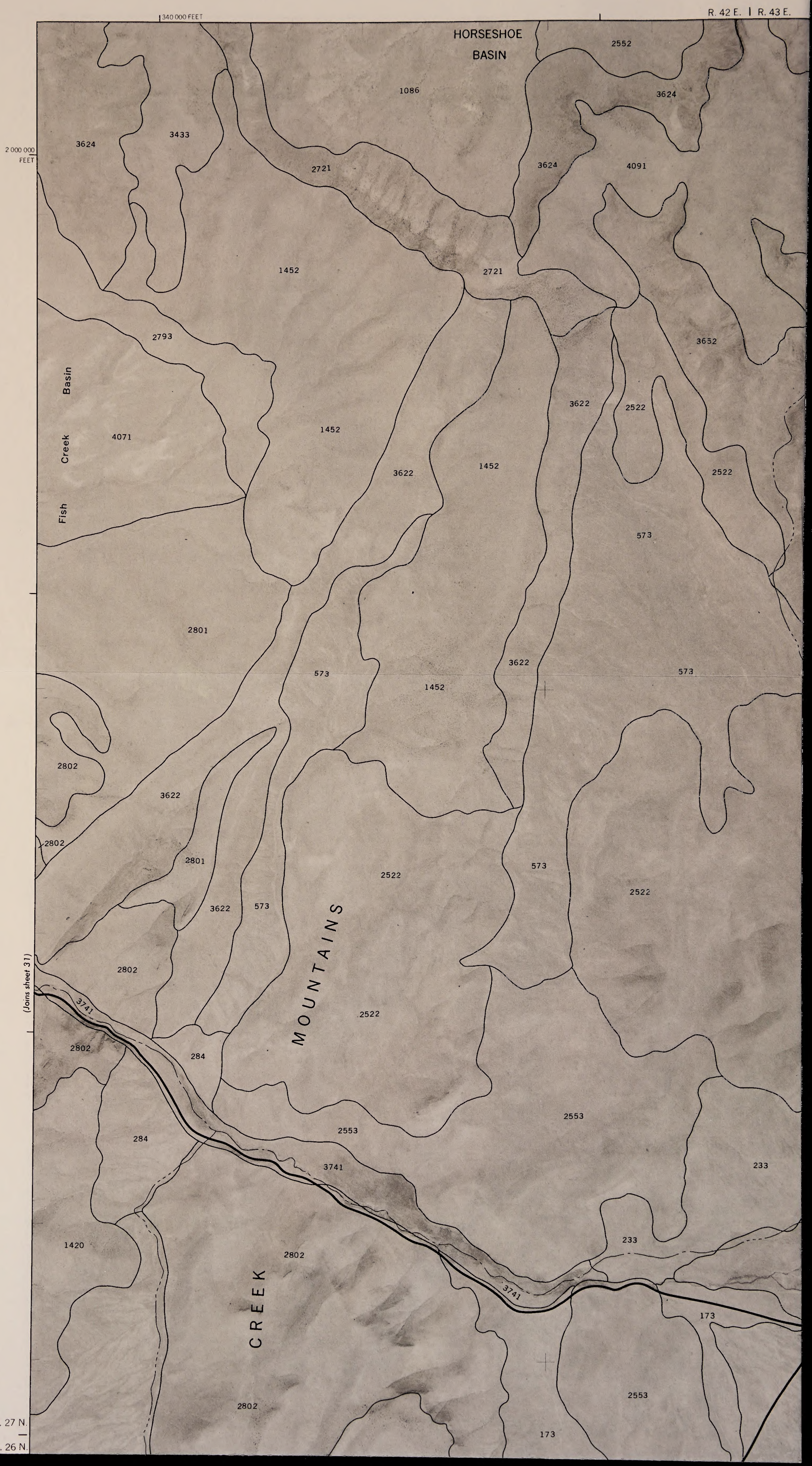
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 32

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



SHEET NUMBER 32

LANDER COUNTY, NEVADA, NORTH PART

(THE CEDARS NW QUADRANGLE)

(Joins sheet 25)

117°07'30"

40°15'

T. 28 N.

T. 27 N.

3624

3652

233

233

233

237

237

4091

2552

233

3652

237

3652

2573

237

161

2522

2553

1143

2553

2522

220

2553

220

161

1143

233

220

3740

Fish Creek Ranch

3740

161

1143

(Joins sheet 33)

T. 27 N.

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

T. 26 N.

212
3740
231
161
1143
REESE
161
161
161
161
233
212
1143
VALLEY OF THE MOON
161
290
53
1143
161
140
852
290
230
212
143
140
143
852
230
305
1 960 000 FEET
230
370 000 FEET

(Joins sheet 40)

N

5000 10000 Feet
1 2 3 Kilometers
000

NORTHERN PART NO. 32

SHEET NO. 32 OF 51

27245151 ID: 88075605 S 599 .N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 33
LANDER COUNTY, NEVADA, NORTH PART
(THE CEDARS NE QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale · 1:24 000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 33

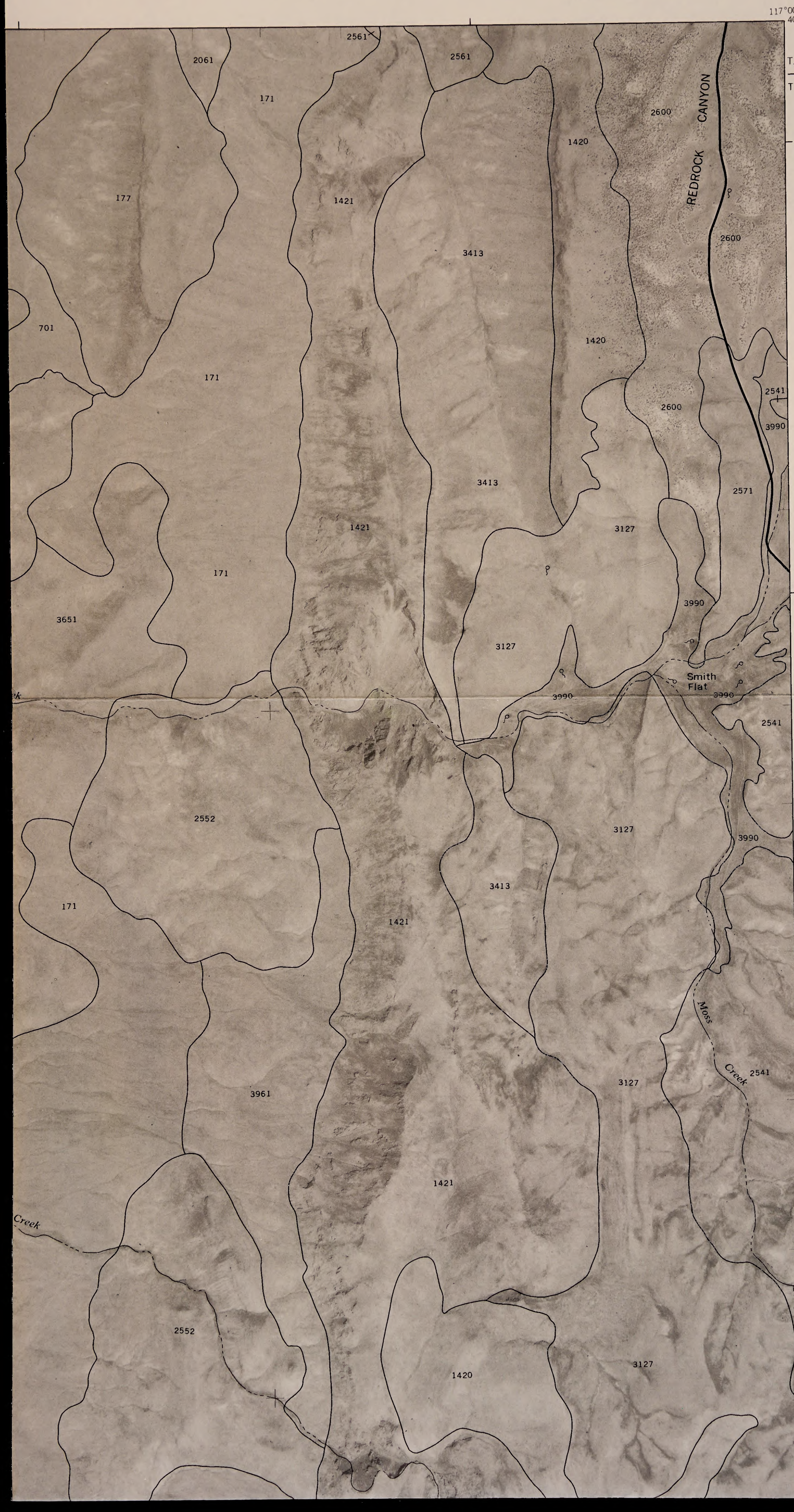
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

#27245151 ID:88075605 S 599 .N3 L36 1992

SHEET NUMBER 33

LANDER COUNTY, NEVADA, NORTH PART

(THE CEDARS NE QUADRANGLE)



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T. 27 N.

T. 26 N.

40°07'30"
117°07'30"

R. 43 E. | R. 44 E.

(Joins sheet 4

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA

T. 27 N.

T. 26 N.

5000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 33

SHEET NO. 33 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 34
LANDER COUNTY, NEVADA, NORTH PART
(CARICO LAKE NW QUADRANGLE)

116°52'30"
40°15'

410 000 FEET
2 000 000 FEET

R. 44 E. | R. 45 E.

(Joins sheet 27)

T. 28 N.
T. 27 N.

Smith Flat

Wilson Creek

Canyon

Crooks Creek

Horse Ranch

SHOSHONE RANGE

Moss Creek

Cottonwood Granite Spring Creek

Rattlesnake Canyon

CARICO LAKE VALLEY

intermittent

(Joins sheet 33)

(Joins sheet 35)

T. 27 N.
T. 26 N.

1 960 000 FEET

40°07'30"
117°00'

R. 44 E. | R. 45 E.

(Joins sheet 42)

440 000 FEET

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5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

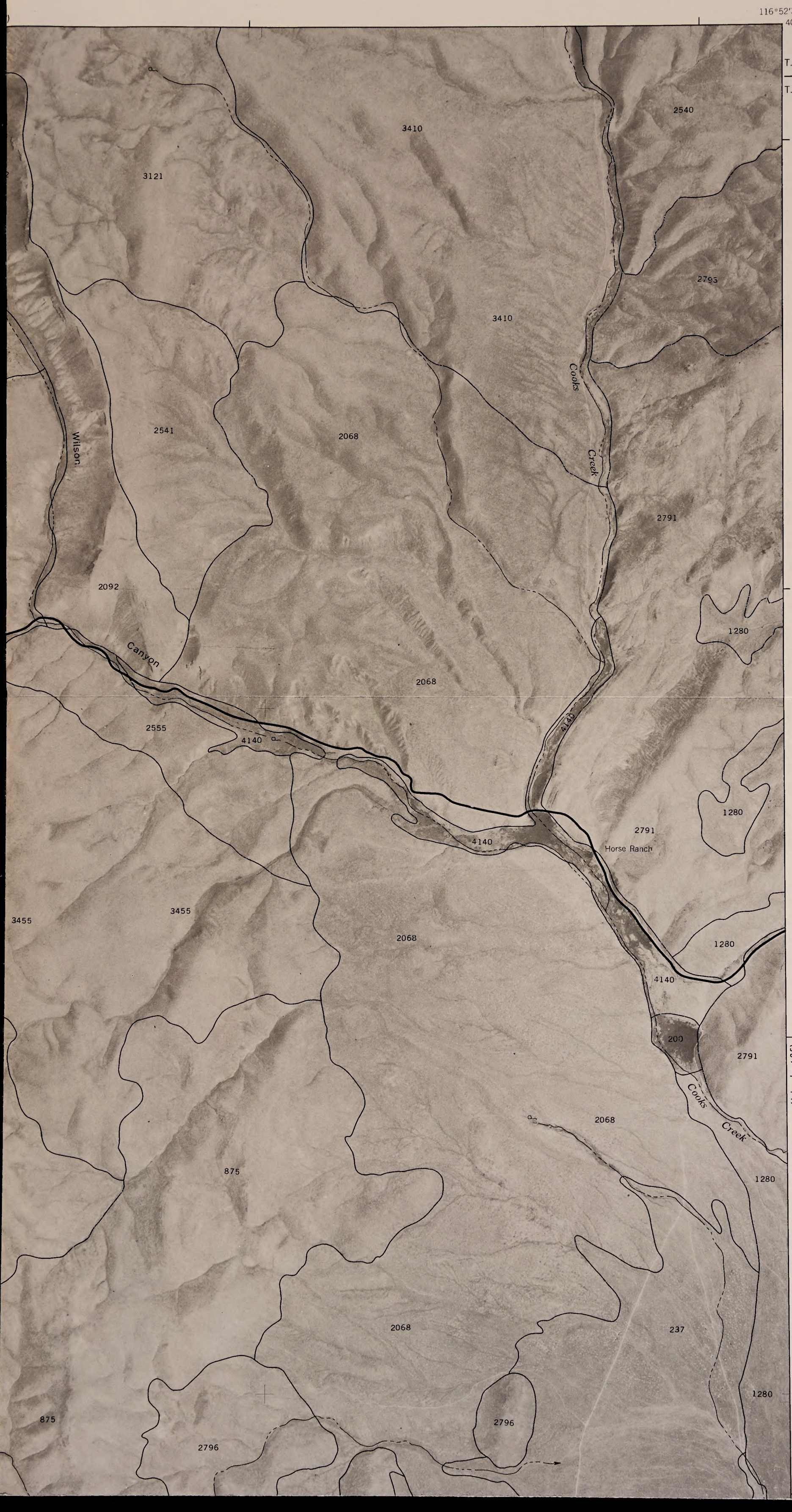
LANDER COUNTY, NEVADA, NORTHERN PART NO. 34

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 34

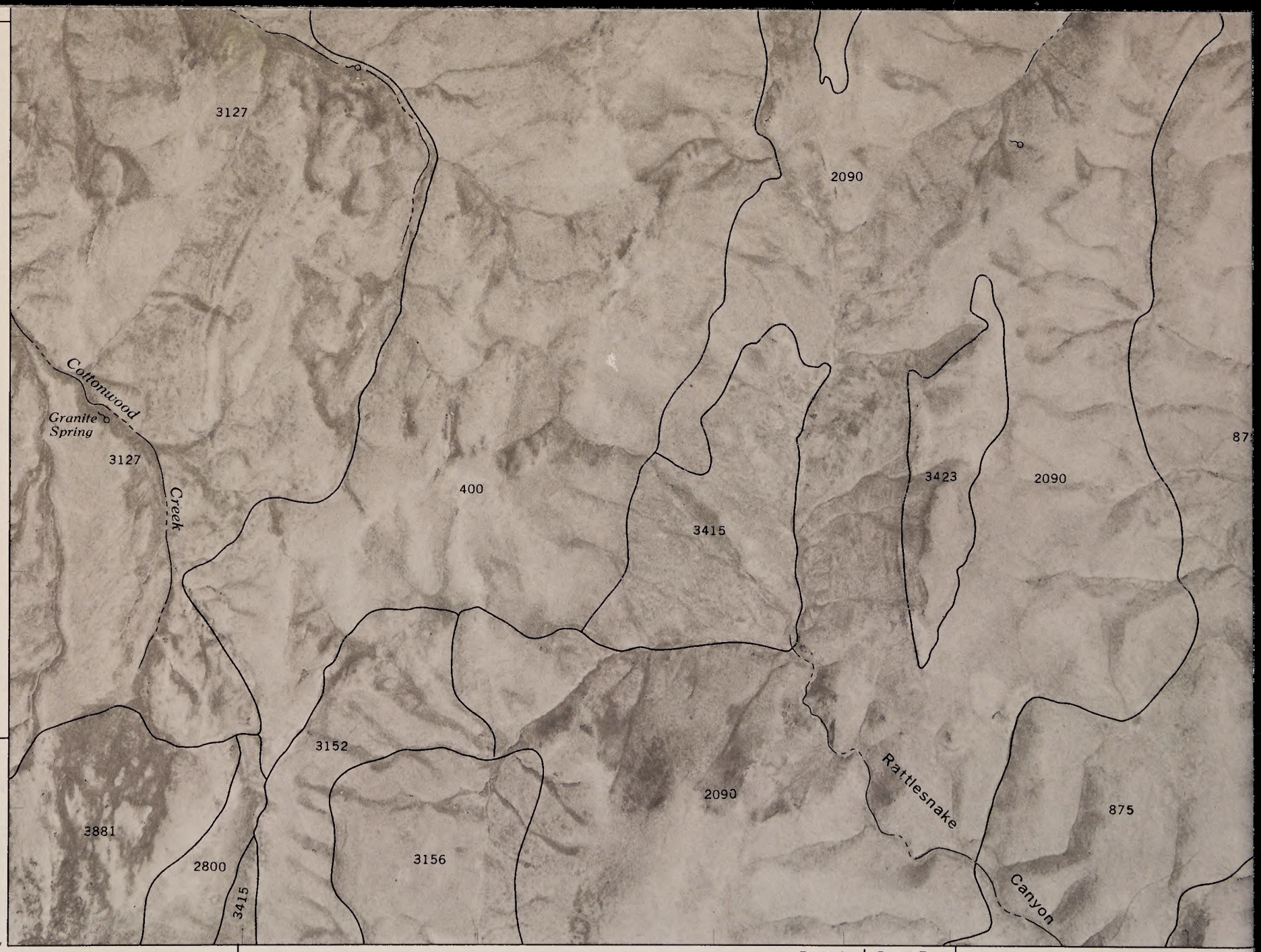
LANDER COUNTY, NEVADA, NORTH PART

(CARICO LAKE NW QUADRANGLE)



T. 27 N.

T. 26 N.



40°07'30"
117°00'

R. 44 E. | R. 45 E.

(Joins sheet 42

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

T. 27 N.

—

T. 26 N.

2068
237
240
2796
1670
2796
237
168
2068
LAKE VALLEY
2796
168
1110
intermittent
1110
200
2796
2796
701
CARICO
168
200
1169
1110
168
168
200

1 960 000 FEET

440 000 FEET

N

5000 10000 Feet

1 2 3 Kilometers

000

, NORTHERN PART NO. 34

SHEET NO. 34 OF 51

#27245151 ID: 88075605 S 599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 35
LANDER COUNTY, NEVADA, NORTH PART
(CARICO LAKE NE QUADRANGLE)

BLM Library
Denver Federal Center
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P.O. Box 25047
Denver, CO 80225

R. 45 E. | R. 46 E.

116°45'
40°15'

T. 28 N.
T. 27 N.

2 000 000 FEET

450 000 FEET

(Joins sheet 28)

Squaw Butte

Elder Creek

Dry Hill Spring

Carico Lake Ranch

Rocky Pass

Cooks Creek

CRESCENT VALLEY

CARICO LAKE VALLEY

(Joins sheet 34)

(Joins sheet 36)

T. 27 N.
T. 26 N.

1 960 000 FEET

470 000 FEET

(Joins sheet 43)

40°07'30"
116°52'30"

R. 45 E. | R. 46 E.

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5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers

Scale - 1:24 000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 35

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

#27245151 ID: 88075605 S 599.N3 L36 1992

SHEET NUMBER 35

LANDER COUNTY, NEVADA, NORTH PART

(CARICO LAKE NE QUADRANGLE)

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Denver, CO 80225

T. 27 N.

T. 26 N.

40°07'30"
116°52'30"

R. 45 E. | R. 46 E.

(Joins sheet 43)

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5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA.

T. 27 N.

T. 26 N.

1280
2802
296
2062
2794
2100
2068
2522
2062
2068
2068
2801
3845
1084
2065
801
296
2062
2065
1 960 000
FEET
3845
2522
2068
470 000 FEET

5000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 35

SHEET NO. 35 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 36
LANDER COUNTY, NEVADA, NORTH PART
(CORTEZ NW QUADRANGLE)

R. 46 E. | R. 47 E.
480 000 FEET
(Joins sheet 29)
116°37'30"
40°15'
T. 28 N.
—
T. 27 N.
2 000 000 FEET
Squaw Butte
VALLEY
CRESCENT
Cortez
Copper Canyon
TURQUOISE MINE
Francis Cabin
(Joins sheet 35)
(Joins sheet 37)
T. 27 N.
—
T. 26 N.
1 960 000 FEET
40°07'30"
116°45'
R. 46 E. | R. 47 E.
(Joins sheet 44)
510 000 FEET

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 36

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

R. 46 E. | R. 47 E.

(Joins sheet 29

480 000 FEET

T. 28 N.

T. 27 N.

2 000 000 FEET

Squaw Butte

CRESCEN

(Joins sheet 35)

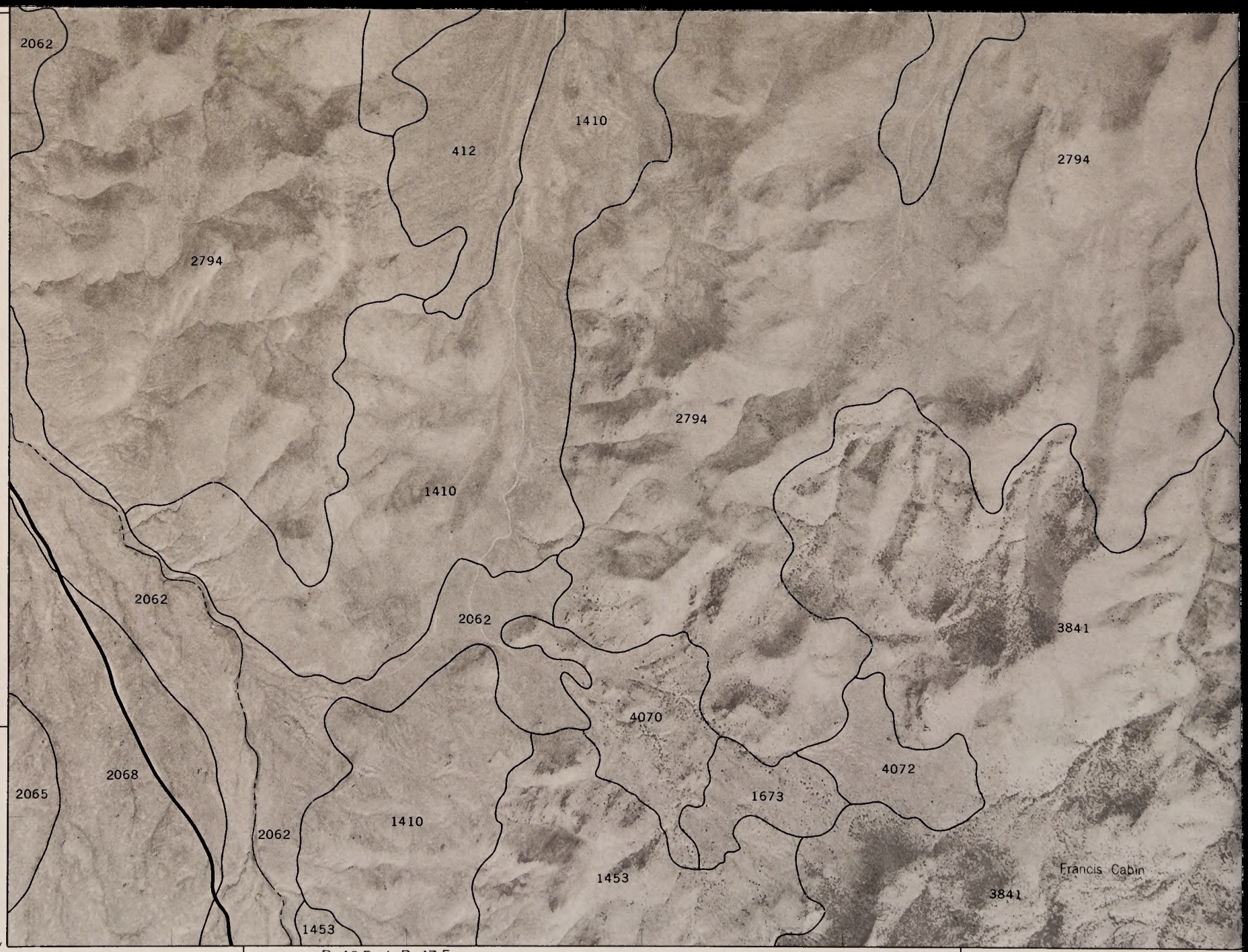
SHEET NUMBER 36

LANDER COUNTY, NEVADA, NORTH PART

(CORTEZ NW QUADRANGLE)

T. 27 N.

T. 26 N.



40°07'30"
116°45'

R. 46 E. | R. 47 E.

(Joins sheet

This map was compiled by U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies on 1975 orthophotography obtained from U.S. Department of the Interior, Geological Survey.

5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

1169

3841

3841

3841

1680

2098

2093

3841

2098

3156

706

T. 26 N.

1 960 000
FEET

510 000 FEET

44)

5000 10000 Feet

1 2 3 Kilometers

000

N

, NORTHERN PART NO. 36

SHEET NO. 36 OF 51

#27245151 ID: 88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 37
LANDER COUNTY, NEVADA, NORTH PART
(CORTEZ NE, WALTI HOT SPRINGS NE AND CORTEZ SE QUADRANGLES)

INSET A

INSET B

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Scale · 1:24 000

LANDER COUNTY, NEVADA, NORTHERN PART NO. 37

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

#27245151 ID: 88075605 S599.N3 L36 1992

SHEET NUMBER 37

LANDER COUNTY, NEVADA, NORTH PART

(CORTEZ NE, WALTI HOT SPRINGS NE AND CORTEZ SE QUADRANGLES)

INSET A

(Joins inset B, lower right)

116°35'40"
40°00'

INSET B

(Joins sheet 37)

116°35'20"
40°07'30"

R. 48 E.

515 000 FEET

1 950 000 FEET

BOUNDARY COUNTY

EUREKA COUNTY

PUBLISHED PREVIOUSLY

LANDER COUNTY

EUREKA COUNTY

1680
706
1092
306
1680
1092
1091
706
1092
631
706
706
631
3742
1092
3742
1092
631
1092
T. 26 N.
T. 25 N.
T. 26 N.
T. 25 N.
(Joins sheet 44)
1145
1145
1145
740
1145
1140
1145
684
680
120
996
1092
1092
1091
441
441
1092
1092
161
161
1092
1140

Allen Ranch

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T. 27 N.
—
T. 26 N.

Canyon

3841

306

1680

2098

3156

282

Cortez

706

1092

1092

306

1680

1092

COUNTY

EUREKA

PUBLISHED

PREVIOUSLY

1 960 000
FEET

40°07'30"
116°37'30"

(Joins inset B, upper right)

R. 48 E.

520 000 FEET

5000 AND 10 000-FOOT GRID TICKS

T. 27 N.
—
T. 26 N.

T. 24 N.
—
T. 23 N.

740

680

443 LIMIT 443

39°52'30"
116°37'30"

R. 47 E. | R. 48 E.

5000 A

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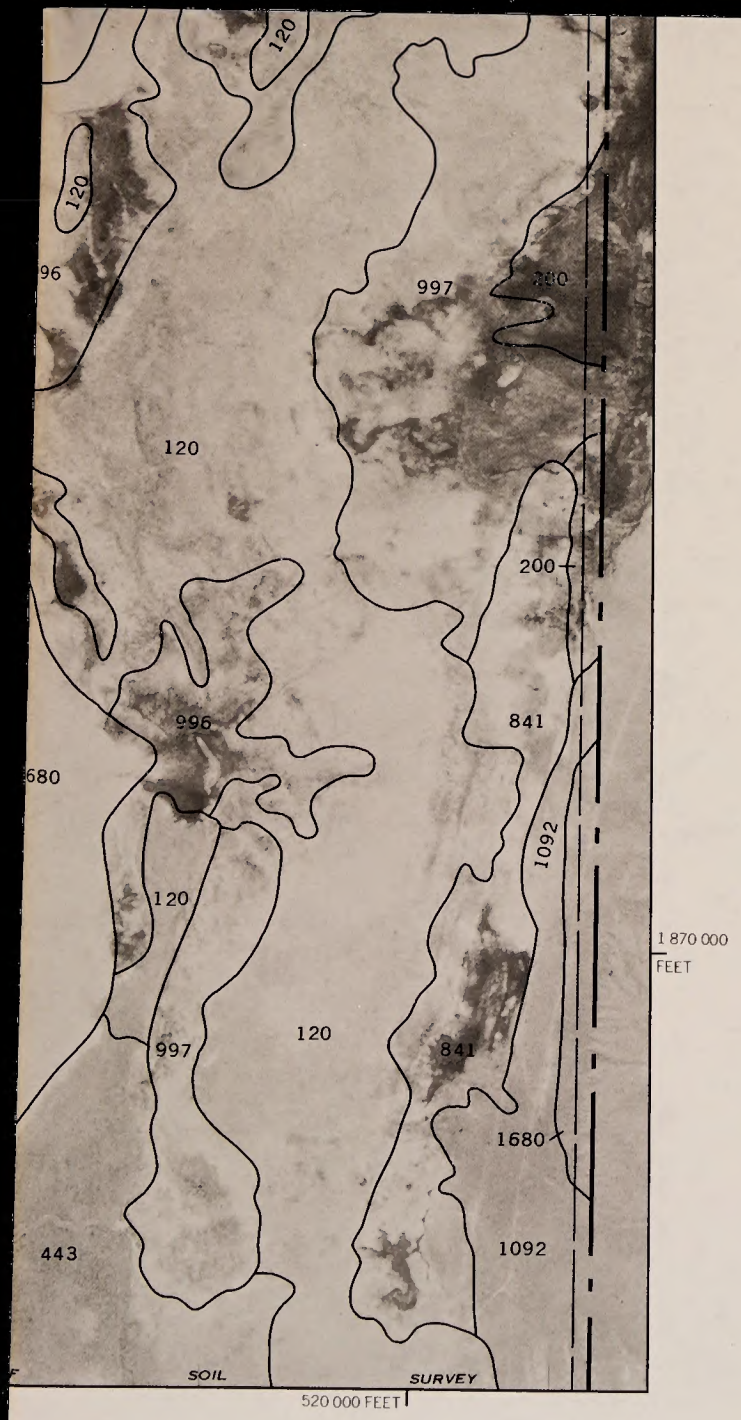
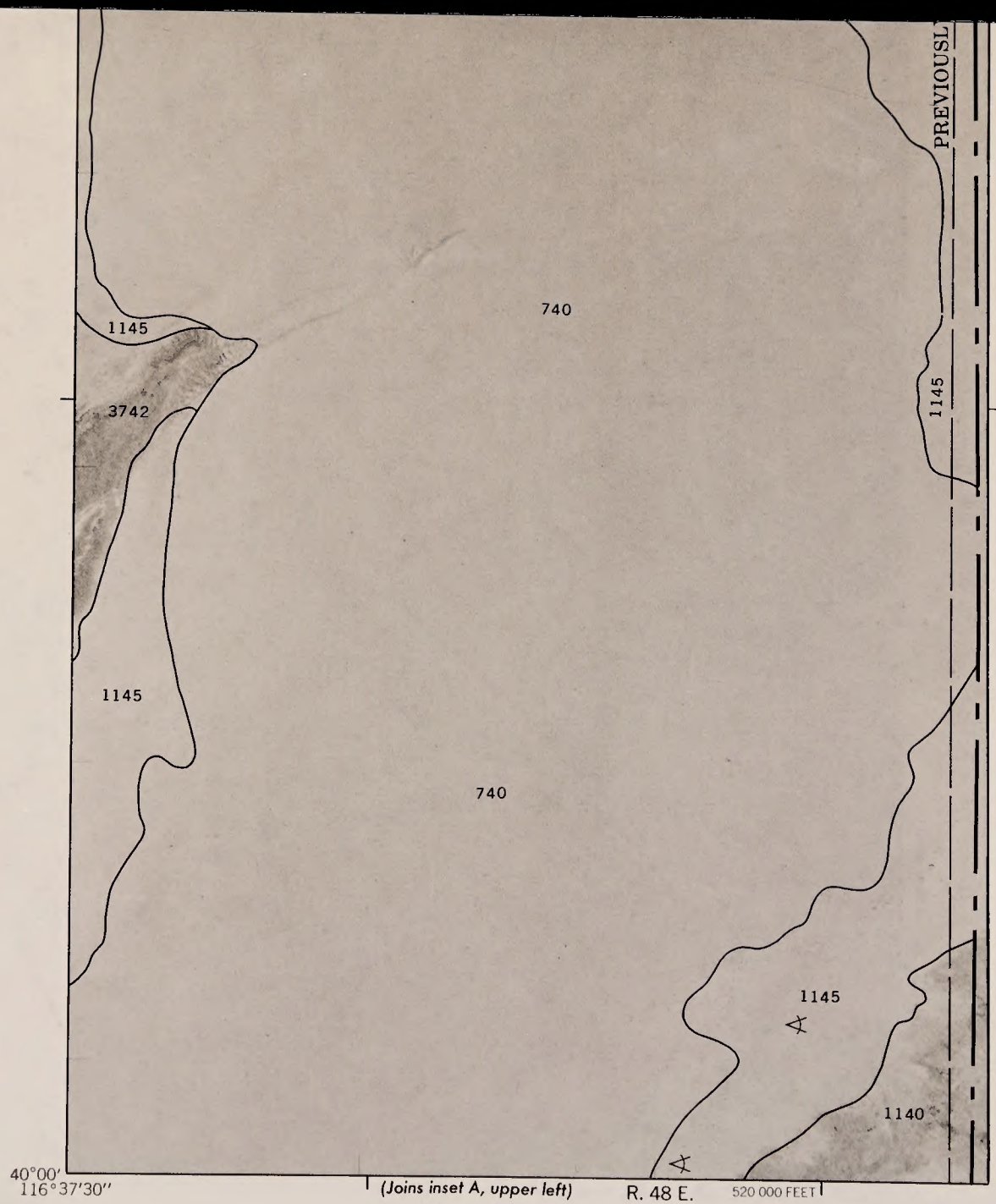
5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,





ND 10 000-FOOT GRID TICKS

5000 AND 10 000-FOOT GRID TICKS

5000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 37

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 38
LANDER COUNTY, NEVADA, NORTH PART
(MT. MOSES SW QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 38

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 38

LANDER COUNTY, NEVADA, NORTH PART

(MT. MOSES SW QUADRANGLE)

(Joins sheet 30)

R. 40 E. | R. 41 E.

117° 22'30"

40° 07'30"

3451 3451 3451 3152

1420

3452 3452 3452

Hess Spring

283 283

2521 2521

283

175 175 175

171

3740

212 172

290 290 290

294 294

800 300 800

230 230 230 230 230

233 233

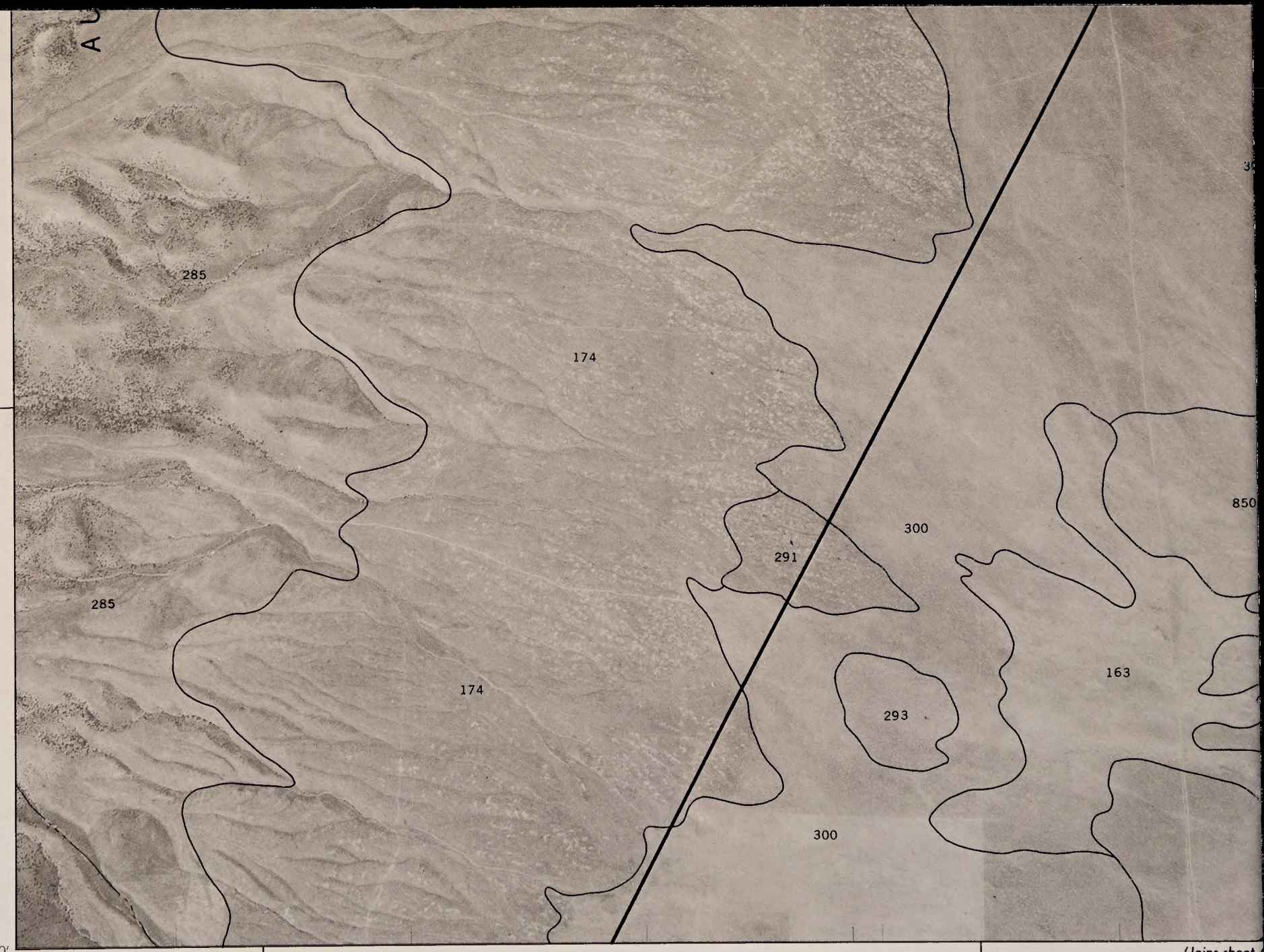
240 240

163

T. 26 N.

T. 25 N.

(Joins sheet 39)



40°00′
117°30′

(Joins sheet

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

ANTELOPE VALLEY

290 290 240 240 851 140 162 163 240 511 851 161 300 850 162 852 140 851 780 233 780 300 850 163 851 805 162 850 850 141 805 851 163 232 850 163 511 780 805 163 780 850 163

1 920 000 FEET

300 000 FEET

R. 40 E. | R. 41 E.

N

5000 10000 Feet

1 2 3 Kilometers

000

, NORTHERN PART NO. 38

SHEET NO. 38 OF 51

#27245151 ID: 98075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 39
LANDER COUNTY, NEVADA, NORTH PART
(MT. MOSES SE QUADRANGLE)

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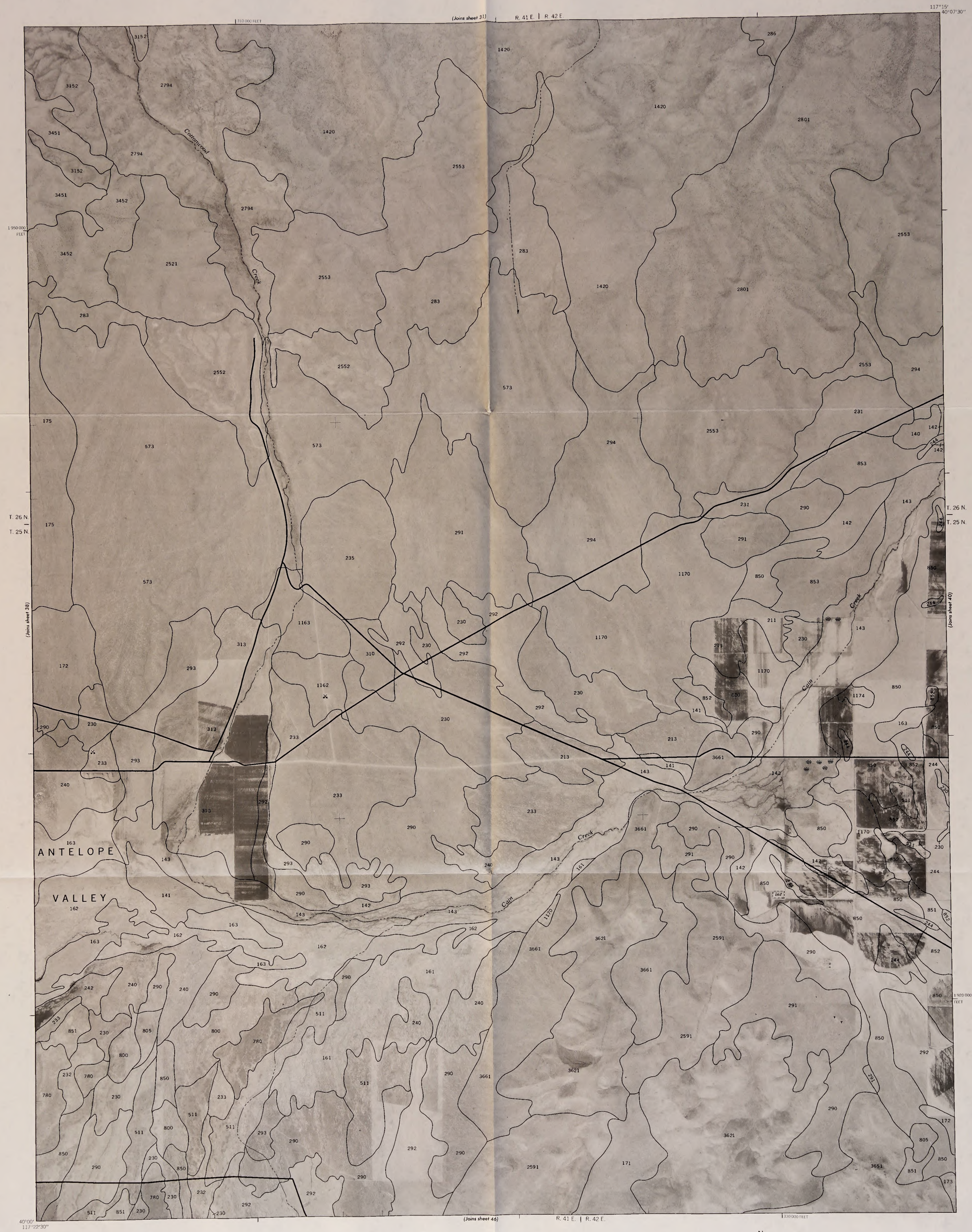

This map was compiled by U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies on 1975 orthophotography obtained from U.S. Department of the Interior, Geological Survey.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 39

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

(Joins sheet 31)

310 000 FEET

1 950 000 FEET

T. 26 N.

T. 25 N.

(Joins sheet 38)

3152 3152 2794 3451 Cottonwood 1420 2553 2794 3152 3451 3452 2794 3452 2521 Creek 2553 283 283 2552 2552 175 573 573 175 573 235 291 1163 230 313 292 230 310 292 172 293 1162 290 230 313 230 233 233 293 240 292 313 233 290 163 290 143 293

ANTELOPE

#27245151 ID: 88075605 S599 .N3 L36 1992

SHEET NUMBER 39

LANDER COUNTY, NEVADA, NORTH PART

(MT. MOSES SE QUADRANGLE)

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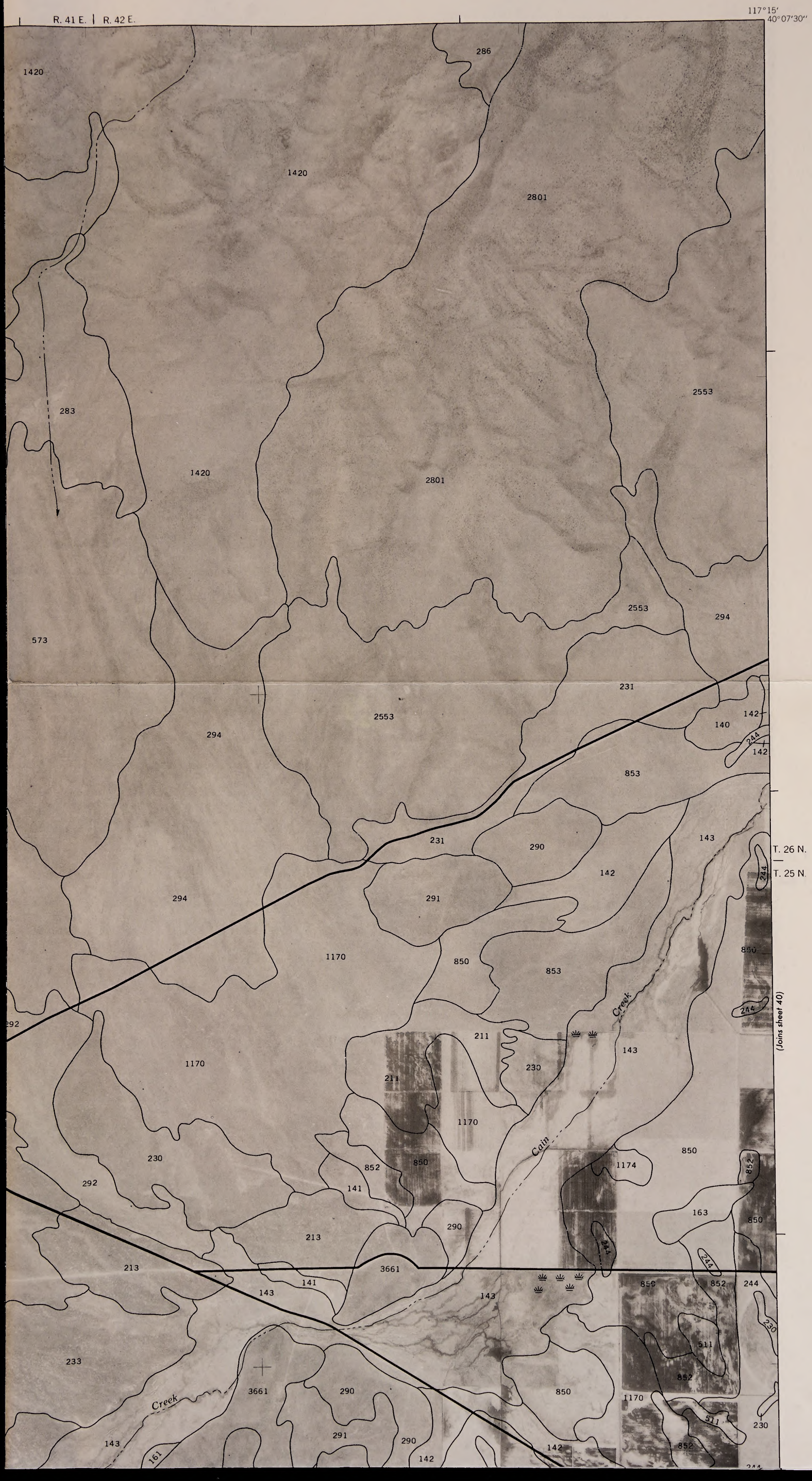

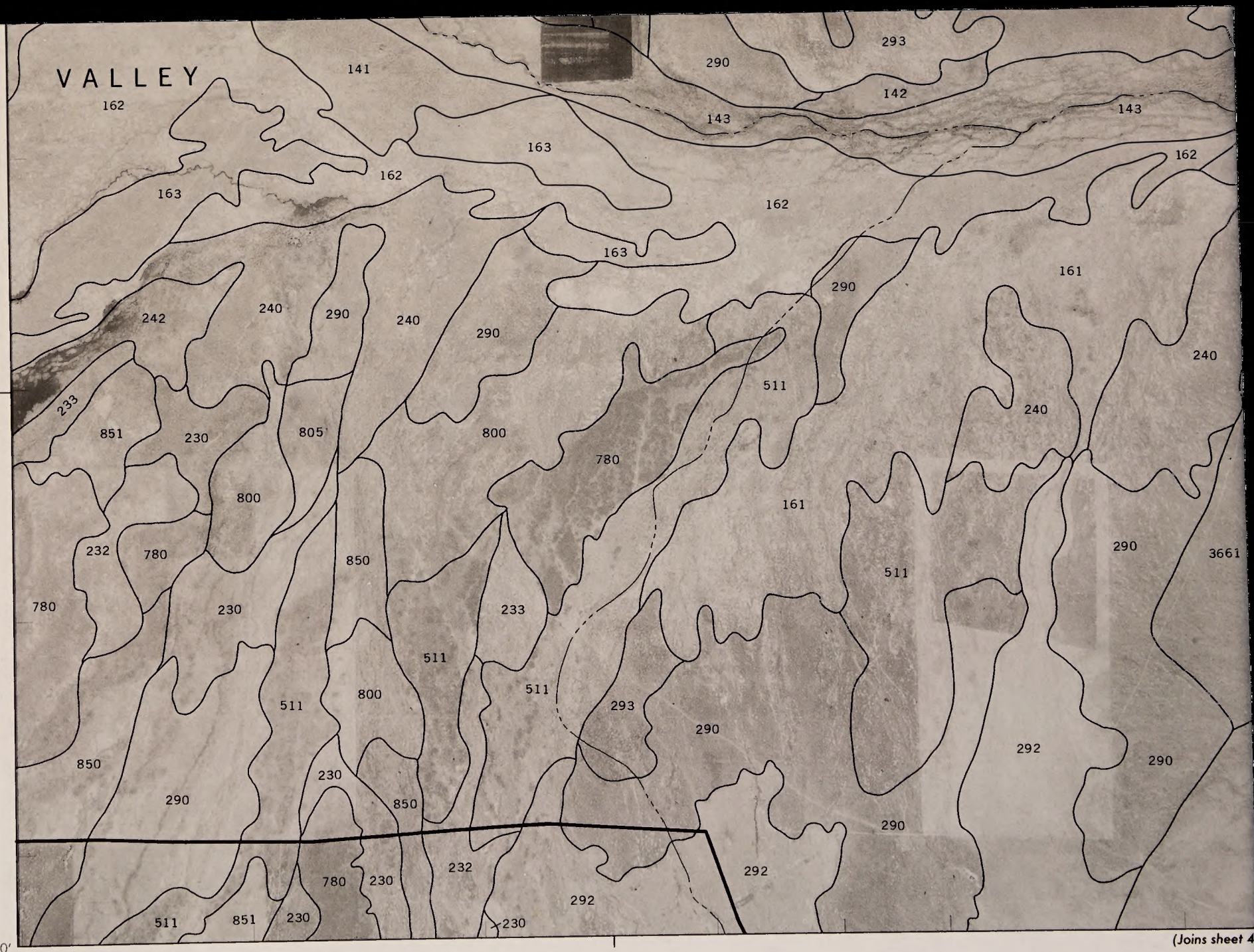

5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

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LANDER COUNTY, NEVADA,

R. 41 E. | R. 42 E.

5000 10000 Feet

1 2 3 Kilometers

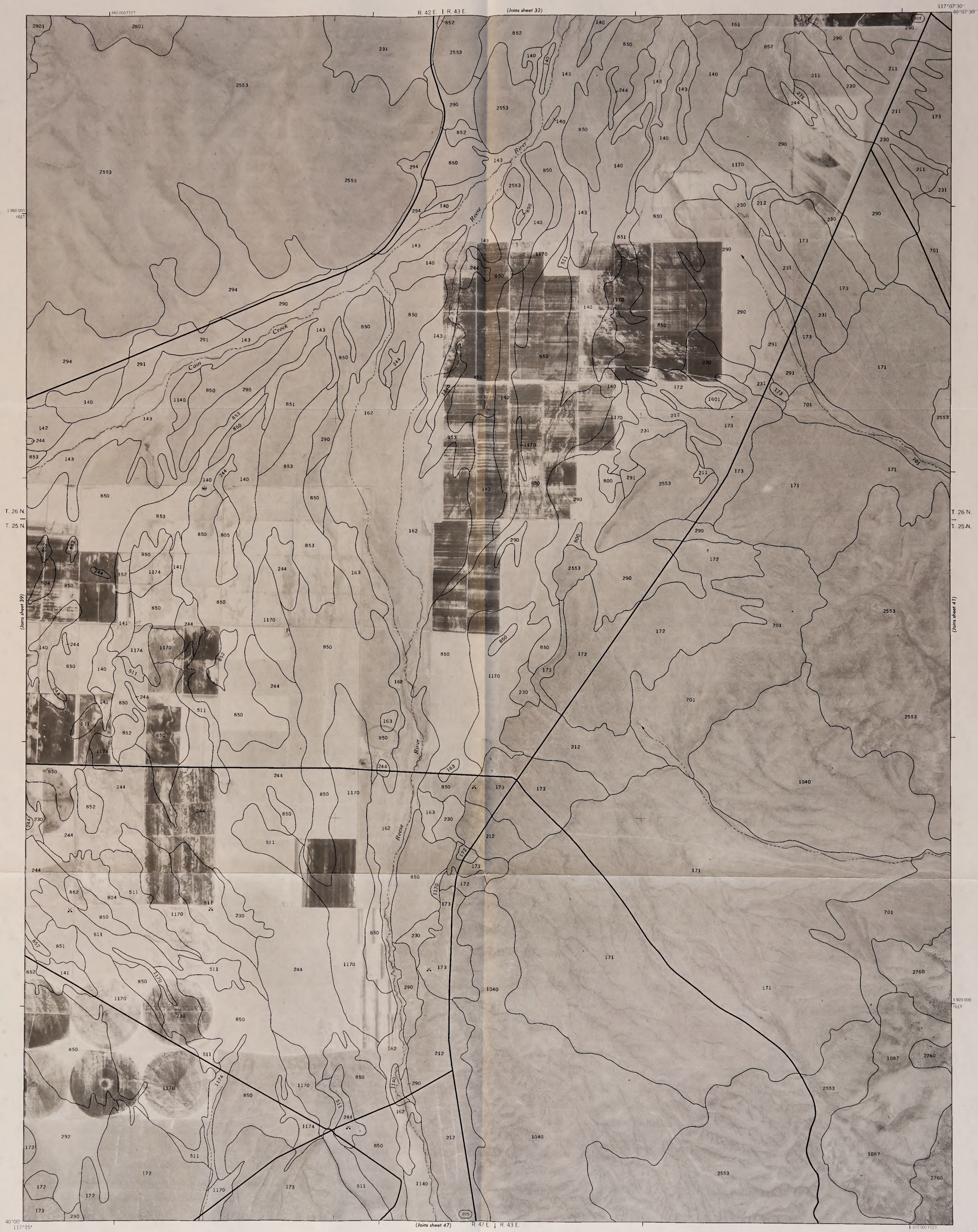
N

NORTHERN PART NO. 39

SHEET NO. 39 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 40
LANDER COUNTY, NEVADA, NORTH PART
(THE CEDARS SW QUADRANGLE)



This map was compiled by U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies on 1975 orthophotography obtained from U.S. Department of the Interior, Geological Survey.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 40

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SOIL CONSERVATION SERVICE

SHEET NUMBER 40

LANDER COUNTY, NEVADA, NORTH PART

(THE CEDARS SW QUADRANGLE)

(Joins sheet 32)

117°07'30"

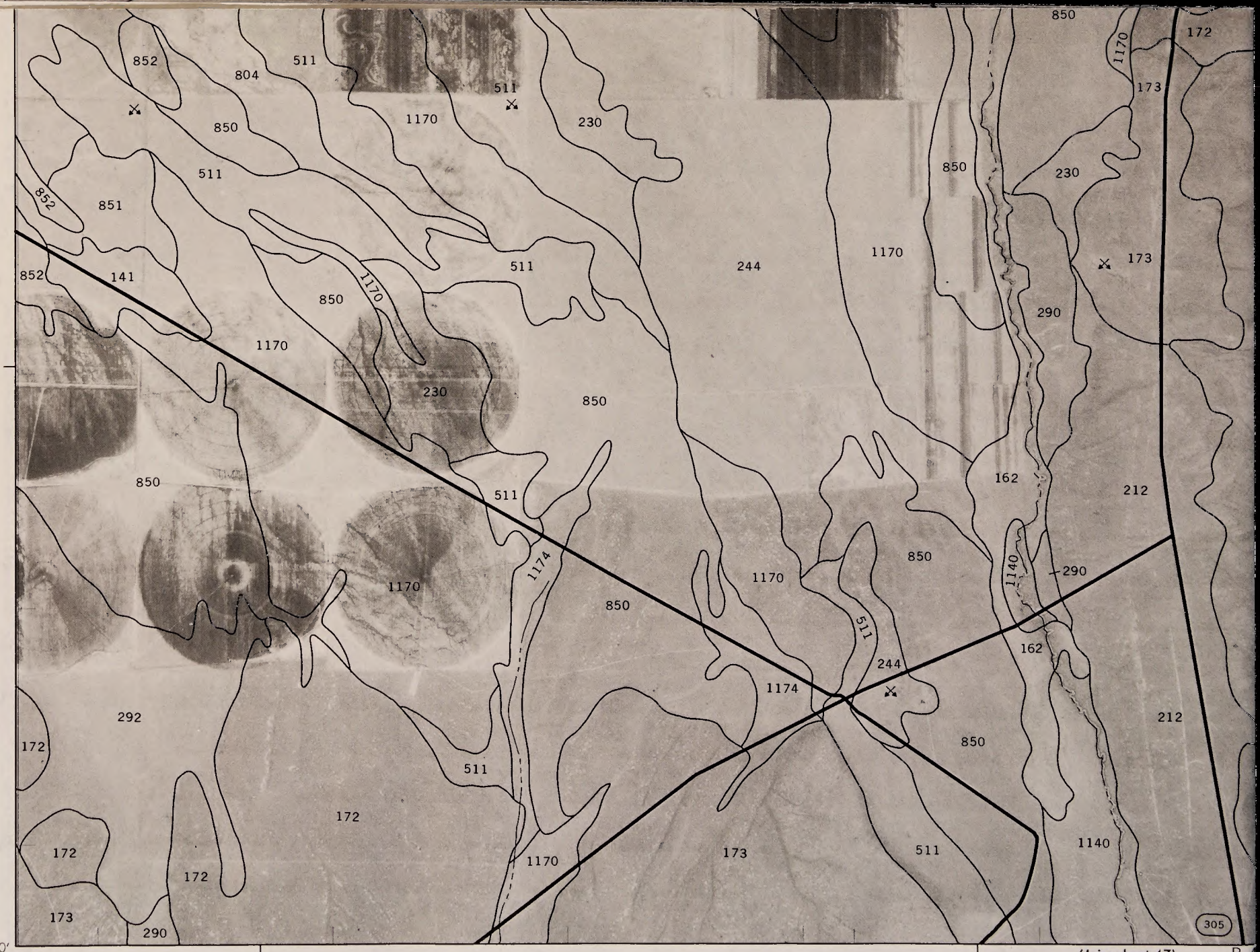
40°07'30"

River

T. 26 N.

T. 25 N.

(Joins sheet 41)



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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

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N

5000 10000 Feet
1 2 3 Kilometers
000

, NORTHERN PART NO. 40

#27245151 ID:88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 41
LANDER COUNTY, NEVADA, NORTH PART
(THE CEDARS SE QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 41

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

380 000 FEET

R. 43 E. | R. 44 E.

(Joins sheet 33)

1 950 000 FEET

T. 26 N.

T. 25 N.

(Joins sheet 40)

230
290
211
231
171
3961
173
231
701
1086
701
231
1086
171
701
3961
2631
171
3961
2553
171
701
701
873
171
3961
2553
171
2553
2760
706
2553
2760
3184
706
2760
3121
1040
Wood

#27245151 ID:98075605 S599.N3 L36 1992

SHEET NUMBER 41

LANDER COUNTY, NEVADA, NORTH PART

(THE CEDARS SE QUADRANGLE)

117°00′

40°07′30″

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P.O. Box 25047
Denver, CO 80225

40°00′
117°07′30″

(Joins sheet 4

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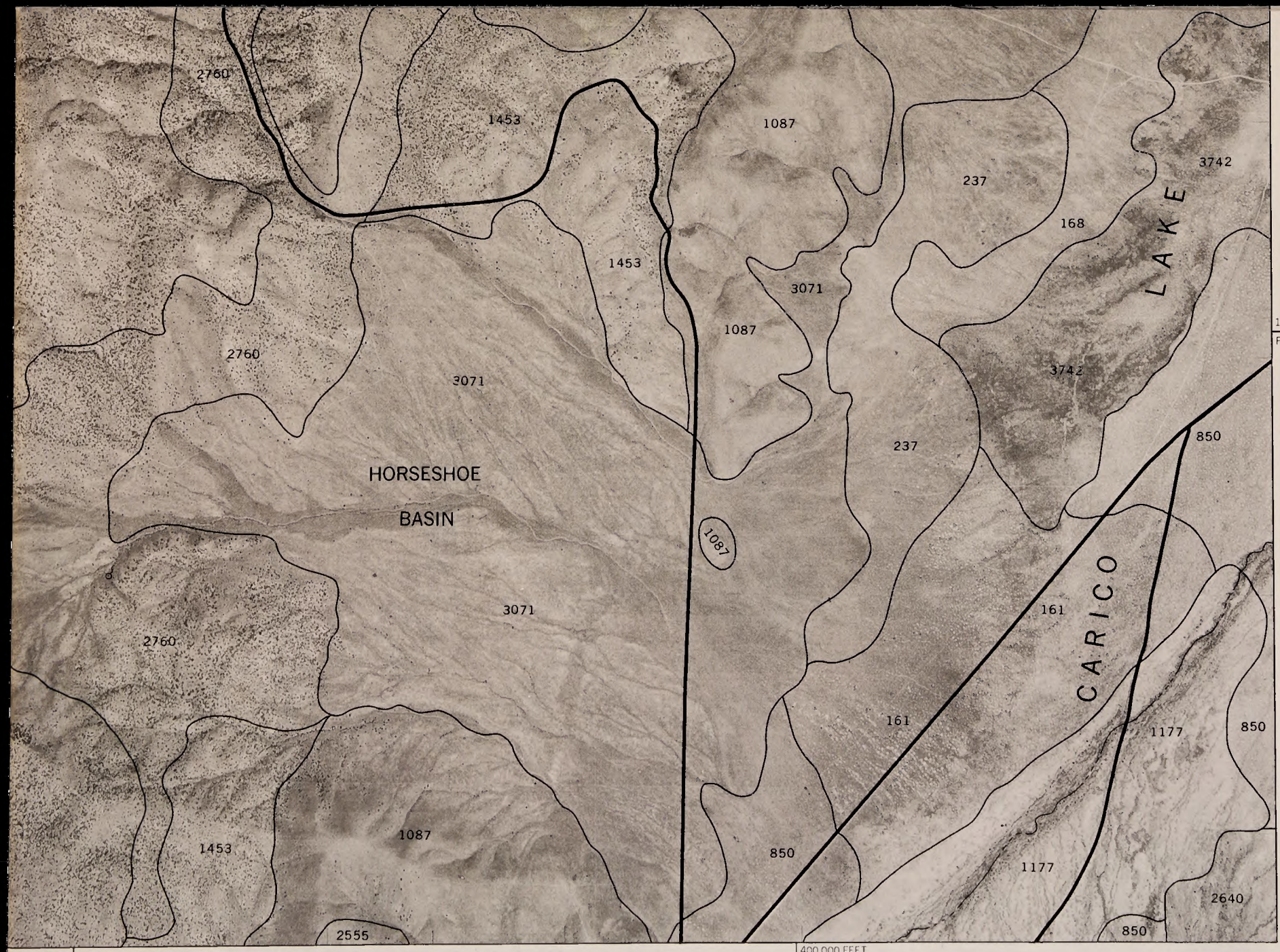
5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,



NORTHERN PART NO. 41

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 42
LANDER COUNTY, NEVADA, NORTH PART
(CARICO LAKE SW QUADRANGLE)

This map was compiled by U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies on 1975 orthophotography obtained from U.S. Department of the Interior, Geological Survey.

5 000 4 000 3 000 2 000 1 000 0 5 000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 42

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 42

LANDER COUNTY, NEVADA, NORTH PART

(CARICO LAKE SW QUADRANGLE)

4)

116°52′30″

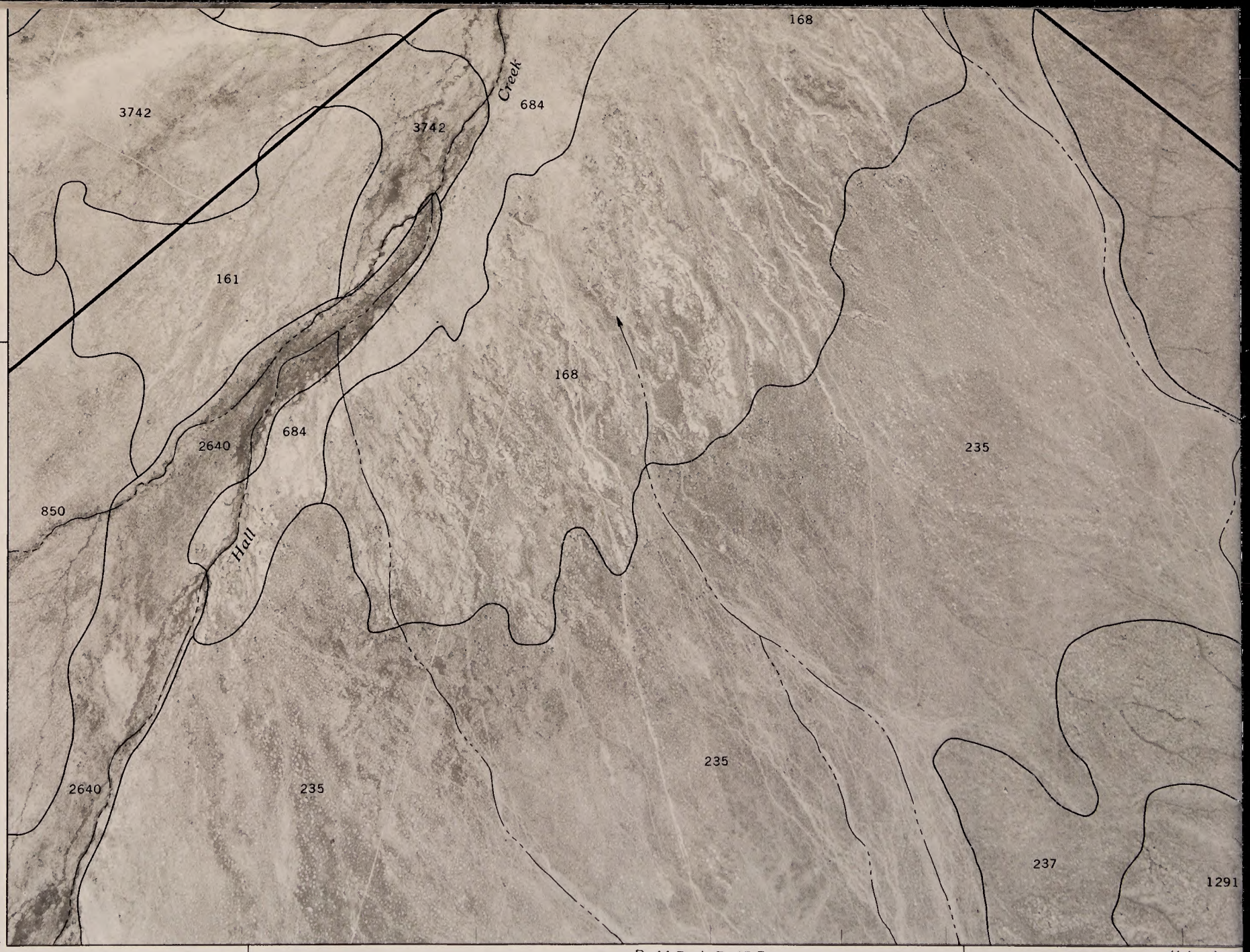
40°07′30″

1110 2796 1110 168 168 740 2796 684 1169 660 2068 168 684 VALLEY 1281 660 993 168 1281 2670 LAKE 1146 Creek 2060 684 3420 Whoiey Spring No. 2 2670 1281 2060 3420 168 2670 2793 235 2060 1450 2571 173 1040

T. 26 N.

T. 25 N.

(Joins sheet 43)



40°00′
117°00′

R. 44 E. | R. 45 E.

(Joins sheet

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

49)

5000 10000 Feet

1 2 3 Kilometers

000

N

, NORTHERN PART NO. 42

SHEET NO. 42 OF 51

27245151 ID: 88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 43
LANDER COUNTY, NEVADA, NORTH PART
(CARICO LAKE SE QUADRANGLE)

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R. 45 E. | R. 46 E.
450 000 FEET
(Joins sheet 35)
116°45'
40°07'30"
1 950 000 FEET
T. 26 N.
T. 25 N.
(Joins sheet 42)
(Joins sheet 44)
RED MTN
Tub Spring
Wholey Spring
Red Mtn Spring No. 2
Red Mtn Spring
Red Mtn Spring No. 3
Woods Springs
Blind Spring
Upper Wood Spring
Upper Wood Spring No. 2
Wood Spring Canyon
Mud Spring
Summit Spring
Dry Canyon Summit
Dry Canyon
TOIYABE RANGE
1 920 000 FEET
40°00'
116°52'30"
R. 45 E. | R. 46 E.
(Joins sheet 50)
1 470 000 FEET

5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

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LANDER COUNTY, NEVADA, NORTHERN PART NO. 43

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

R. 45 E. | R. 46 E.

(Joins sheet 35)

450 000 FEET

1 950 000 FEET

T. 26 N.

T. 25 N.

(Joins sheet 42)

RED MTN

Wholey Spring

Red Mtn Spring No. 2

Red Mtn Spring

Red Mtn Spring No. 3

2796 1281 1084 3071 3845 3845 1084 3071 3845 2100 2092 1673 1281 4071 4071 2092 2602 1671 2670 1670 2670 4070 3420 2670 1670 3415 3420 3415 2602 1670 4070 2602 3415 2620 2602 2793 3452 2602 2620 2620 2602 2571 3413 1084

27245151 ID: 88075605 S 599 .N3 L36 1992

SHEET NUMBER 43

LANDER COUNTY, NEVADA, NORTH PART

(CARICO LAKE SE QUADRANGLE)

116°45′

40°07′30″

T. 26 N.

T. 25 N.

(Joins sheet 44)

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P.O. Box 25047
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40°00′
116°52′30″

R. 45 E. | R. 46 E.

(Joins sheet 50

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,

5000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 43

SHEET NO. 43 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 44
LANDER COUNTY, NEVADA, NORTH PART
(CORTEZ SW QUADRANGLE)

1 480 000 FEET R. 46 E. | R. 47 E. (Joins sheet 36) 116°37'30" 40°07'30"

1 950 000 FEET

T. 26 N.
T. 25 N.

(Joins sheet 43)

(Joins sheet 37)

Cantano Ranch

Wilson Spring

Wenban Spring

RANGE

BALD MTN

COPPER CANYON

TOIYABE

Woods Spring

HOT SPRINGS POINT

1 920 000 FEET

40°00' 116°45'

R. 46 E. | R. 47 E. (Joins sheet 51) 510 000 FEET R. 47 E. | R. 48 E.

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale · 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 44

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

480 000 FEET R. 46 E. | R. 47 E.

(Joins sheet 3

1 950 000 FEET

T. 26 N.

T. 25 N.

(Joins sheet 43)

2068 1410 2062 1453 2065 3841 1671 3111 3841 Caetano Ranch 1671 2098 2100 3841 1671 3071 3410 Wilson Spring 2100 2602 3111 3841 3420 RANGE 1427 1420 461 1427 1420 461 BALD MTN 1420 1420 2602 4051 4051 3134 TOIYABE

SHEET NUMBER 44

LANDER COUNTY, NEVADA, NORTH PART

(CORTEZ SW QUADRANGLE)

116°37'30"

40°07'30"

(Joins sheet 37)

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5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

R. 47 E. | R. 48 E.

5000 10000 Feet

1 2 3 Kilometers

000

N

, NORTHERN PART NO. 44

SHEET NO. 44 OF 51

#27245151 ID:88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 45
LANDER COUNTY, NEVADA, NORTH PART
(GILBERT CREEK NW QUADRANGLE)

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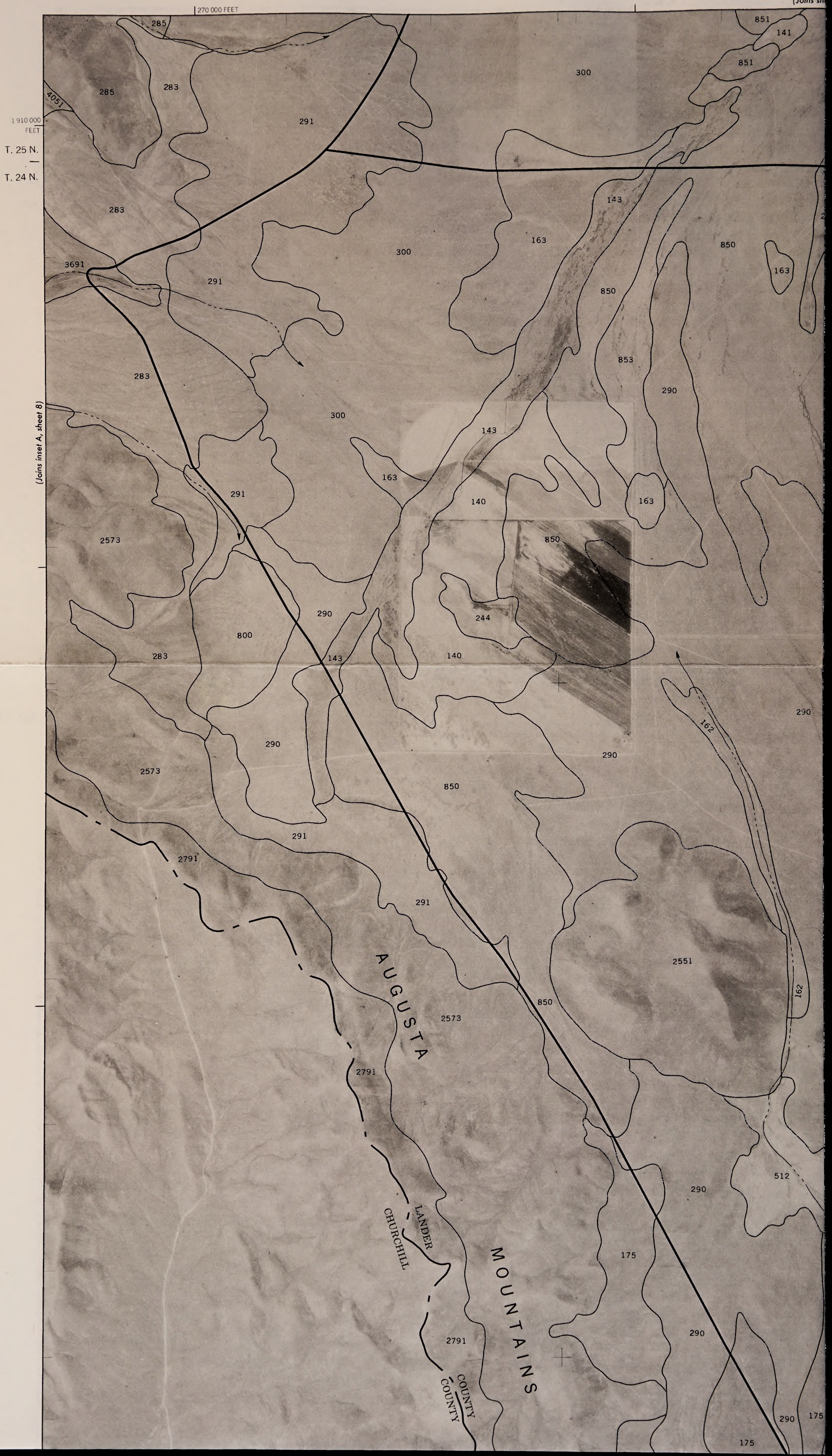
5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 45

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



#27245151 ID:88075605 S599.N3 L36 1992

SHEET NUMBER 45

LANDER COUNTY, NEVADA, NORTH PART

(GILBERT CREEK NW QUADRANGLE)

R. 40 E. | R. 41 E.

117°22'30"

40°00'

T. 25 N.

T. 24 N.

Antelope Creek

ANTELOPE VALLEY

(Joins sheet 38)

(Joins sheet 46)

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39°52'30"
117°30'

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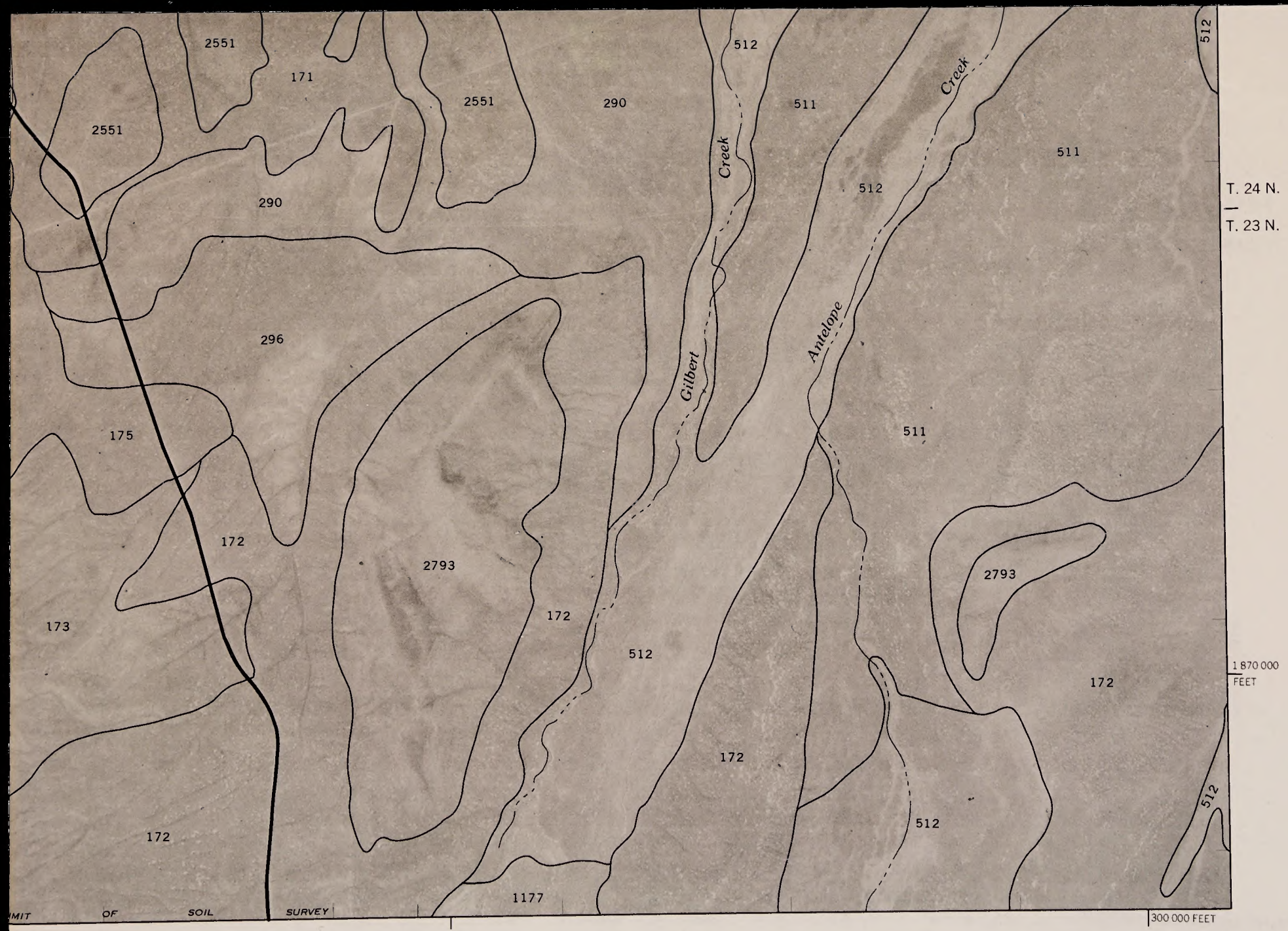
5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,



5000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 45

SHEET NO. 45 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 46
LANDER COUNTY, NEVADA, NORTH PART
(GILBERT CREEK NE QUADRANGLE)

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5 000 4 000 3 000 2 000 1 000 0 5 000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 46

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

(Joins s

310 000 FEET

1 910 000 FEET

T. 25 N.

T. 24 N.

(Joins sheet 45)

VALLEY

ANTELOPE

SHEET NUMBER 46

LANDER COUNTY, NEVADA, NORTH PART

(GILBERT CREEK NE QUADRANGLE)

(Sheet 39)

R. 41 E. | R. 42 E.

117°15′

40°00′

T. 25 N.

T. 24 N.

(Joins sheet 47)

T. 24 N.
—
T. 23 N.

39°52'30"
117°22'30"

512
512
512
511
171
171
171
172
255
511
290
171
172
573
173
512
702
172
172
172
2555
172
Antelope
Butte
2555
LIMIT OF SOIL

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5000 4000 3000 2000 1000 0
1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

, NORTHERN PART NO. 46

SHEET NO. 46 OF 51

#27245151 ID:88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 47
LANDER COUNTY, NEVADA, NORTH PART
(MANHATTAN MTN NW QUADRANGLE)

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5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 47

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

(Joins sheet 40)

R. 42 E.

340 000 FEET

1 910 000 FEET

T. 25 N.

(Joins sheet 46)

290
172
511
305
212
1140
173
850
1170
2793
2550
1670
2797
2796

#27245151 ID:88075605 S 599 .N3 L36 1992

SHEET NUMBER 47

LANDER COUNTY, NEVADA, NORTH PART

(MANHATTAN MTN NW QUADRANGLE)

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39°52'30"
117°15'

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5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,

N

5000 10000 Feet

1 2 3 Kilometers

00

NORTHERN PART NO. 47

SHEET NO. 47 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 48
LANDER COUNTY, NEVADA, NORTH PART
(MANHATTAN MTN NE QUADRANGLE)

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5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 48

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

(Joins sheet 47)

380 000 FEET

1 910 000 FEET

THE CEDARS

Burro Spring

3134
2760
2091
2760
1087
3845
3071
2760
2797
1087
1087
2797
3071
1087
2793
2681
2760
1670
2798
1087
2540
2798
2540
183
2796
2796
3071
183
3071
1177
2796
3071
183
2681
4070
2521
1146
4071
183
1670
1450
701
993
1146
2681
3071
305

(Joins sheet 47)

SHEET NUMBER 48

LANDER COUNTY, NEVADA, NORTH PART

(MANHATTAN MTN NE QUADRANGLE)

T. 24 N.

T. 23 N.

39°52'30"
117°07'30"

R. 43 E. | R. 44 E.

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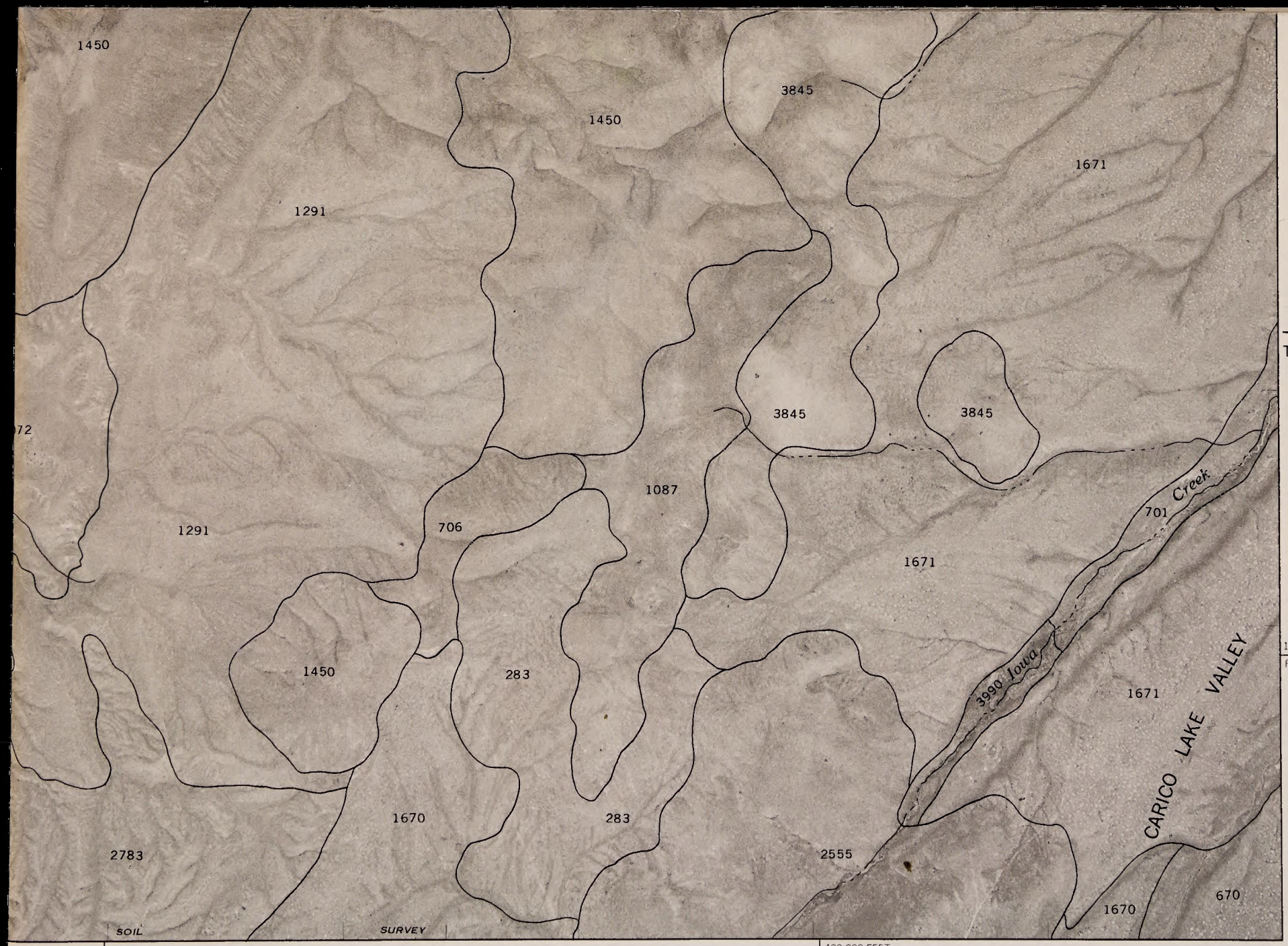
5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA



5000 10000 Feet

1 2 3 Kilometers

000

N

, NORTHERN PART NO. 48

SHEET NO. 48 OF 51

#27245151 ID: 88075605 S 599 .N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 49
LANDER COUNTY, NEVADA, NORTH PART
(HALL CREEK NW QUADRANGLE)

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 49

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

#27245151 ID: 88075605 S 599 .N3 L36 1992

SHEET NUMBER 49

LANDER COUNTY, NEVADA, NORTH PART

(HALL CREEK NW QUADRANGLE)

116°52'30"

40°00'

T. 25 N.

T. 24 N.

2060 1291 1291 1387 286 284 230 2681 286 1291 284 177 1292 1292 284 706 177 1671 284 3071 706 706 2540 3071 Dead Ox Canyon 3693 3390 1670 2540 RANGE 1420 3423 3423

(Joins sheet 50)

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T. 24 N.

T. 23 N.

39°52'30"

117°00'

R. 44 E. | R. 45 E.

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:240

LANDER COUNTY, NEVADA,

5000 10000 Feet

1 2 3 Kilometers

00

N

NORTHERN PART NO. 49

SHEET NO. 49 OF 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 50
LANDER COUNTY, NEVADA, NORTH PART
(HALL CREEK NE QUADRANGLE)

R. 45 E. | R. 46 E. | 460 000 FEET (Joins sheet 43) 116°45' 40°00'

1 910 000 FEET

T. 25 N. — T. 24 N.

(Joins sheet 49)

(Joins sheet 51)

T. 24 N. — T. 23 N.

1 870 000 FEET

39°52'30" 116°52'30"

R. 45 E. | R. 46 E. | 470 000 FEET

DRY CANYON

Dry

Dead Oak Canyon

Cannon Wash

CORRAL CANYON

Corral Spring

TOIYABE RANGE

GRASS VALLEY

LIMIT OF SOIL SURVEY

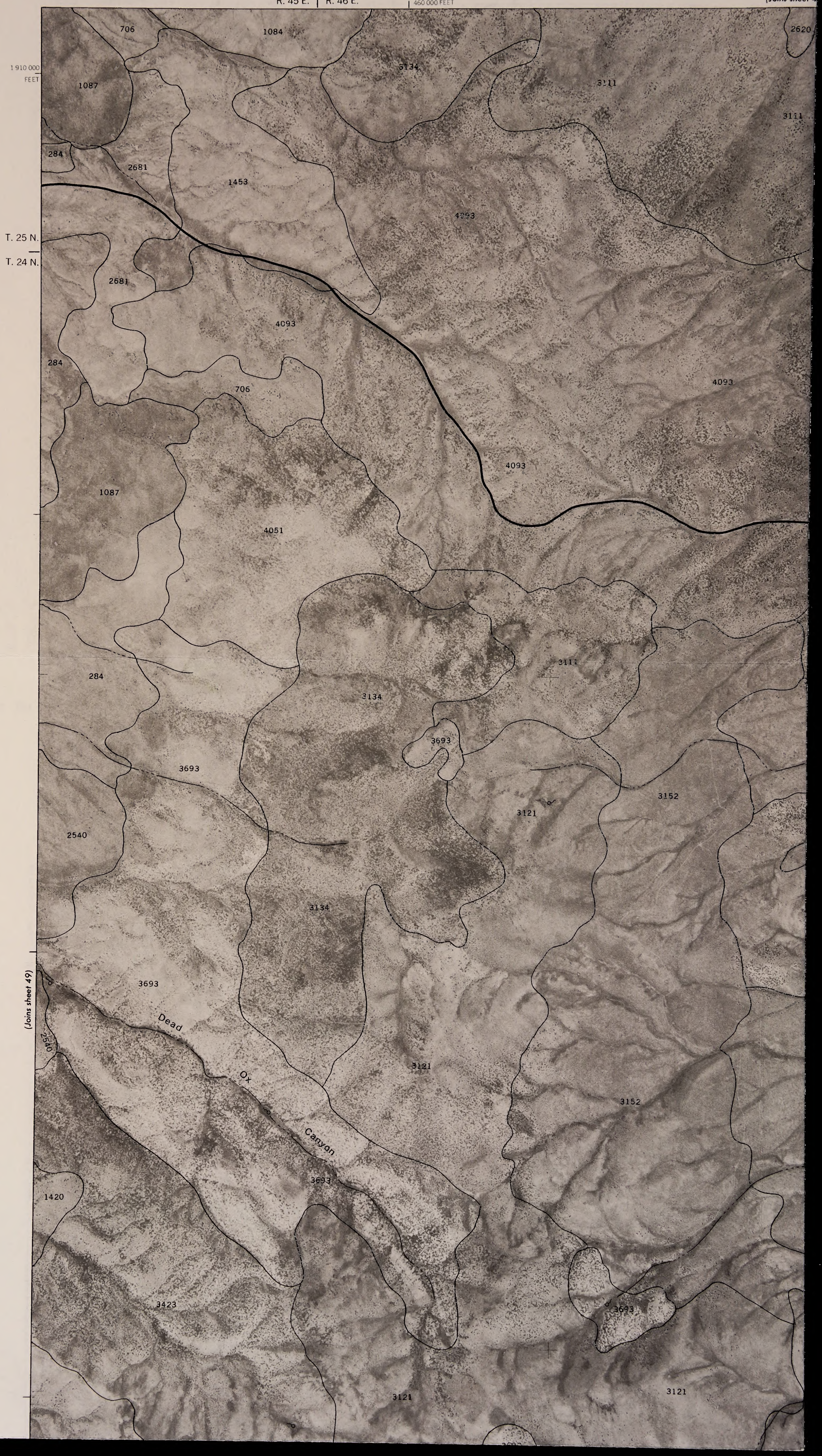
This map was compiled by U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies on 1975 orthophotography obtained from U.S. Department of the Interior, Geological Survey.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 50

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



SHEET NUMBER 50

LANDER COUNTY, NEVADA, NORTH PART

(HALL CREEK NE QUADRANGLE)

3)

116°45′

40°00′

T. 25 N.

T. 24 N.

DRY CANYON

Dry

Canyon

Wash

(Joins sheet 51)

T. 24 N.
T. 23 N.

39°52'30"
116°52'30"

R. 45 E. | R. 46 E.

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5000 4000 3000 2000 1000 0

1 .5 0

Scale - 1:24

LANDER COUNTY, NEVADA

N

5000 10000 Feet

1 2 3 Kilometers

000

, NORTHERN PART NO. 50

SHEET NO. 50 OF 51

27245151 ID: 88075605 S599.N3 L36 1992

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NUMBER 51
LANDER COUNTY, NEVADA, NORTH PART
(WALTI HOT SPRINGS NW QUADRANGLE)

R. 46 E. | R. 47 E. — 480 000 FEET — (Joins sheet 44) — R. 47 E. | R. 48 E. — 116°37'30" — 40°00'

1 910 000 FEET

T. 25 N. — T. 24 N.

Hot Springs Point

Hot Springs

Little Hot Springs

VALLEY

GRASS

A

(Joins sheet 50)

(Joins sheet 37)

1 870 000 FEET

39°52'30" — 116°45'

R. 46 E. | R. 47 E. — 510 000 FEET

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5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 2 3 Kilometers
Scale - 1:24000

N

LANDER COUNTY, NEVADA, NORTHERN PART NO. 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

27245151 ID: 88075605 S 599.N3 L36 1992

SHEET NUMBER 51

LANDER COUNTY, NEVADA, NORTH PART

(WALTI HOT SPRINGS NW QUADRANGLE)

R. 47 E. | R. 48 E.

116°37'30"

40°00'

T. 25 N.

T. 24 N.

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(Joins sheet 37)

T. 24 N.
—
T. 23 N.

39°52′30″
116°45′

R. 46 E. | R. 47 E.

5 000 4 000 3 000 2 000 1 000 0

1 .5 0

Scale - 1:240

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LANDER COUNTY, NEVADA.

680
443
GRASS
680
443
680
443
443
680
Little Hot Springs
443
1140
740
1140
680
443
1140
680
443
1140
680
SOIL
SURVEY

T. 24 N.
—
T. 23 N.

1 870 000
FEET

510 000 FEET

5000
10000 Feet
1
2
3 Kilometers
00

N

NORTHERN PART NO. 51

SHEET NO. 51 OF 51